

DEFENSE OR DETERRENCE?
THE FUTURE OF MISSILE DEFENSE

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

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ABSTRACT

This study seeks to determine whether it is time to pursue a new defense strategy that incorporates ballistic missile defense. It reviews the historical milestones in the missile defense debate using four major factors that influenced decisions on strategic defense: the threat, the technology, the international environment, and the domestic environment. The nature and magnitude of the threats that US leaders have sought to counter with missile defenses are determined from official assessments, such as the Central Intelligence Agency's National Intelligence Estimates. The technological feasibility assessment considers each prospective system's ability to counter those threats and the cost of doing so. The author's analysis of the international environment considers the international community's reaction to various American attempts to develop and field missile defenses. Finally, the domestic environment analysis focuses on the importance of players such as Congress, public opinion, the role of scientists, and the role of the President and his administration in missile defense decisions. The author assesses how those actors have supported proposed efforts to field missile defenses in various periods. Finally, this analysis examines what factors persuaded policy makers that missile defenses were unnecessary, undesirable, or impossible in the past, then determines whether current circumstances have changed enough to suggest that such systems are now needed and within reach. This study finds that it is indeed time for the US to pursue a strategy that includes strategic defense.

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Chapter 1

Introduction

In December 2001, President George W. Bush announced that the US would withdraw from the 1972 Anti-Ballistic Missile (ABM) Treaty in six months, making it very clear that he and his administration intended to deploy a ballistic missile defense system. Anticipating the end of the treaty and its constraints, the Administration reoriented missile defense efforts in early 2001, removing the distinction between theater missile defense (TMD) and national missile defense (NMD) in order to field a layered and integrated system capable of defending against a small ballistic missile attack. The Bush Administration's goal is to provide the US with the capability of protecting itself and its forces, friends, and allies from ballistic missile attack. Yet, despite the praiseworthy motives behind this effort, there remains significant concern, both internationally and domestically, about whether moving forward with missile defense is appropriate. Technical feasibility and cost are but two considerations decision makers must take into account on a program of this magnitude and strategic impact. Others include potential effects on regional conflicts, the impact on arms control and nonproliferation efforts, and whether altering the US national strategy to incorporate missile defenses will ultimately enhance or jeopardize the nation's security.

Research Question

With these considerations in mind, this study seeks to determine whether it is time to pursue a new defense strategy, one that incorporates ballistic missile defense. The US has consistently conducted research and development activities for missile defense since the end of World War II. Americans have confronted the question of whether to field missile defenses on two previous occasions. In 1975, the US activated "Safeguard," a missile defense system employing nuclear-armed interceptors, but Congress shut it down the day after it became operational, largely because of the limits imposed by the 1972

ABM Treaty. A second confrontation with the issue resulted from President Ronald Reagan's Strategic Defense Initiative speech in 1983. That declaration inspired a vigorous effort to develop and field an operational system. Yet, despite the President's full support and billions of dollars in funding, the US could not solve the problem of how to defeat a massive nuclear ballistic missile strike from the USSR, and Reagan's proposed system was eventually scaled back to a limited research and development effort.

The end of the Cold War presented the US a new strategic environment. Improving relations with Russia reduced the need to develop a shield to defend the nation against a massive missile attack. However, new threats arising from the proliferation of nuclear and ballistic missile technology to states hostile to American interests have once again raised the issue of whether to deploy missile defense systems capable of protecting not just the troops in the field, but the US itself.

Methodology

This analysis will examine what factors persuaded policy makers that missile defenses were unnecessary, undesirable, or impossible in the past, then determine whether current circumstances have changed enough to suggest that such systems are now needed and within reach. Four major factors are considered: the threat, the technology, the international environment, and the domestic environment. Looking at each of these factors individually and together will determine if any one or some combination of them is necessary or sufficient to move decision makers toward fielding a missile defense system. An overall threat assessment is determined from the expected range of given actors' ballistic missiles, the potential strategies for their use against the US, and the level of political tension between the US and those actors. Technological feasibility is determined from the type of missile defense system required to counter various types of threats, its likelihood of development and finally the relative costs of various systems. The response of various governments to possible US missile defense options determines the international environment. Public expectations, Congressional responses, Presidential preferences, and special interest agendas all factor into the domestic environment analysis.

Information for this analysis comes from a variety of sources. The nature and magnitude of the threats are determined from official assessments, such as the Central Intelligence Agency's (CIA) National Intelligence Estimates (NIE). The technological feasibility assessment considers the capability of systems under development and official cost estimates from the Missile Defense Agency and the Congressional Budget Office. My analysis of the international environment considers the official or public reactions of leaders in the international community to various American attempts to develop and field missile defenses. Finally, the domestic environment analysis focuses on the importance of players such as Congress, public opinion, the role of scientists, and the role of the President and his administration in missile defense decisions.

Overview

The study begins in Chapter 2 where I look at the long and complicated history of missile defense. Seven distinct historical periods help to define the primary elements under consideration. This chapter examines the two previous attempts to implement strategic defenses. Chapter 3 takes an in-depth look at the current Bush Administration's position on missile defense both before and after the 2001 terrorist attacks. This chapter sets the stage for the analysis that follows. In Chapter 4, I carefully examine the current environment in terms of the four factors of this study to determine what kind of missile defenses are needed, whether such systems are feasible and affordable, how the international community is reacting to US efforts to develop missile defenses, and whether the American public will support this effort. In Chapter 5, I conduct a comparative analysis to determine how these factors differ from the past condition to determine whether the time for missile defenses has finally come. This study finds that it is indeed time for the US to pursue a strategy that includes strategic defense. I discuss the implications of that finding and offer some policy recommendations for the way ahead.

Chapter 2

Evolution of Missile Defense

The missile defense concept is not new. It began in World War II, almost disappeared during the Cold War, and began a slow comeback in the early 1980s. Today, it continues to evolve. Tracing that evolution through its various stages provides insight into the issues today's leaders face as they decide the future role of missile defense in US national defense strategy. The stages of missile defense evolution were often preceded by trigger events that resulted in major attitude shifts towards missile defense. Understanding the role of trigger events, and their relationship to the four factors in this study, will provide decision makers the background necessary for future decisions.

US Nuclear Supremacy

The US emerged from World War II as the only state with nuclear weapons, and it was unaccustomed to its new role as the leading world power. The Truman Administration, therefore, strove to define the US's role in this new strategic environment. The awesome force of the atomic bomb, recently demonstrated against Japan, held the promise of a new national defense strategy, one based on nuclear rather than conventional deterrence. In the years following the war, the Soviet threat became ever more apparent, and President Truman, recognizing the need to demobilize a war weary nation, relied on US nuclear weapons to deter the large Soviet conventional armies.¹ Nuclear weapons provided a cheap alternative to large standing armies in both the US and Europe.

In addition to nuclear weapons, World War II saw the first use of ballistic missiles in the German V-2. The allies were unable to defend against this new weapon. In fact, experts believed the ability to bring down the V-2 was "beyond the scope of

¹ Morton H. Halperin, *Nuclear Fallacy: Dispelling the Myth of Nuclear Strategy* (Cambridge Mass.: Ballinger Publishing Company, 1987), 7.

contemporary technology.”² Yet, the ballistic missile, especially if paired with nuclear weapons, was a potential weapon the US could not ignore.

Despite its postwar status as the only country with nuclear weapons, the US clearly recognized the potential threat posed by both ballistic missiles and nuclear weapons and began pursuing methods to defend against those threats. The 1946 War Department Equipment Board recognized the inevitability of intercontinental range missiles and the lack of defenses to intercept them, and it recommended “the development of defensive measures against atomic weapons be accorded priority over all other National Defense projects.”³ The Central Intelligence Group (the predecessor to the Central Intelligence Agency) claimed in a 1946 report “that every other Soviet program has been subordinated to the development of an atomic bomb...a quantity of such bombs could be produced and stockpiled by 1956.”⁴

A report from the United States Army Air Forces (USAAF) Scientific Advisory Group, published in 1945, explored several different active defensive measures against missiles.⁵ The report claimed that the same methods could be used against atomic or ordinary explosives and that it would be possible to “to hit or destroy the missiles by blast or fragmentation from warheads of defensive missiles.”⁶ Initially, the Army concentrated defensive efforts on anti-aircraft missiles since the earliest nuclear threats against the US were from airdropped weapons, while the USAAF began studying the ballistic missile defense problem as early as 1946.⁷ The establishment of the United States Air Force as a separate service in 1947 set off a series of roles and missions debates that ultimately

² Kenneth P. Werrell, *Hitting a Bullet with a Bullet: A History of Ballistic Missile Defense*, College of Aerospace Doctrine, Research, and Education (Maxwell AFB, Ala.: AU Press, 2000), 1.

³ War Department, *War Department Equipment Board Report*, (Washington, D.C.: Office of the Chief of Staff, 29 May 1946), 8.

⁴ Central Intelligence Group, “Soviet Capabilities for the Development and Production of Certain Types of Weapons and Equipment,” in *Assessing the Soviet Threat: The Early Cold War Years*, ed. Woodrow J. Kuhns, available from <http://www.odci.gov/csi/books/coldwaryrs/docs.html>, documents 1-45, 87.

⁵ United States Army Air Forces, Scientific Advisory Group, *Toward New Horizons: SCIENCE, the Key to Air Supremacy*. Commemorative Edition 1950-1992 (Headquarters Air Force Systems Command History Office, 1992), 65-66. Document is now declassified.

⁶ United States Army Air Forces, Scientific Advisory Group, 65-66.

⁷ Donald R. Baucom, *The Origins of SDI, 1944-1983*, (Lawrence KS: University Press of Kansas, 1992), 1.

determined each service's role in missile defense.⁸

Several events occurred during the next few years that legitimized and focused the threats posed by nuclear weapons and ballistic missiles. The USSR exploded its first atomic device in August 1949 and the US reacted by further reducing conventional spending and accelerating its nuclear build-up.⁹ US concerns regarding the hostile intentions of the Soviet Union were confirmed in June 1950 when Soviet advisors were discovered in North Korea.¹⁰ Hostility towards the US, combined with a growing Soviet nuclear weapons capability, confirmed US fears that the USSR was challenging America's nuclear monopoly. American leaders reacted by tripling the US defense budget in order to expand the nuclear arsenal.¹¹ By the time the Soviet Union exploded its first air-droppable thermonuclear weapon in August 1953, the US had already begun deploying sensors and interceptors to meet the threat from Soviet bombers.¹² US intercontinental ballistic missiles (ICBM) were also in development and officials assumed the USSR was developing them as well, making missile defense research necessary.¹³

The likelihood that the Soviets would field ballistic missiles continued to increase. The 16 March 1956 National Intelligence Estimate predicted the Soviet Union would “devote a high priority to the development of offensive missiles and that it will begin to stockpile various types [medium and intermediate range].”¹⁴ In response, the Army began adapting its Nike-Hercules air defense missile for use as a nuclear-tipped anti-ballistic missile and called it Nike-Zeus.¹⁵ Its goal was to produce a “nation-wide defense against Soviet ICBMs.”¹⁶ In addition to developing needed defenses, the Army

⁸ Due to ongoing roles and missions debates between the Army and Air Force, the Army became responsible for missiles without wings, considered to be more like artillery; and the Air Force became responsible for missiles with wings, considered more like aircraft (Werrell, 2).

⁹ B. Bruce-Briggs, *The Shield of Faith: A Chronicle of Strategic Defense from Zeppelins to Star Wars*, (New York: Simon and Schuster, 1988), 49.

¹⁰ *Ibid.*, 49-50.

¹¹ *Ibid.*

¹² *Ibid.*, 85.

¹³ *Ibid.*, 101.

¹⁴ Donald P. Steury, ed., *Intentions and Capabilities: Estimates on Soviet Strategic Forces, 1950-1983*, (Washington: Center for the Study of Intelligence, 1996), 24.

¹⁵ Bruce-Briggs, 105.

¹⁶ Office of Technology Assessment (OTA), “Ballistic Missile Defense Technologies,” *Strategic Defenses*, (Princeton, NJ: Princeton University Press, 1986), 45.

also attempted to justify its existence and funding by embracing a mission related to the nuclear strategy of the Eisenhower Administration.¹⁷ Eisenhower's "New Look" planned on a small standing force and low defense spending by relying on nuclear weapons—a doctrine later known as massive retaliation.¹⁸ Missile defense provided the means to keep the Army relevant in a nuclear-dominated defense establishment.

Early Army attempts to move the system into production received Congressional support, but Eisenhower expressed doubt about capability and cost.¹⁹ Though military and intelligence officials recognized a threat and believed the US could develop the technology to counter it, and though the early-Cold War environment suggested other nations would tolerate the US pursuing missile defenses, system advocates could not overcome the concerns inherent in the domestic environment, in this case, those of President Eisenhower.

Despite concerns regarding the feasibility of missile defenses, by 1957, Eisenhower and his advisors began to question the country's ability to withstand a nuclear attack. Eisenhower was concerned "that the picture of the terrific destruction resulting from a nuclear attack warranted taking a look at the whole matter in terms of determining how much destruction the United States and its people can absorb and still survive."²⁰ President Eisenhower chartered the Gaither committee in May 1957 to study "active and passive defense measures for the protection of the civil population."²¹ Before the committee was able to submit its report, actions by the Soviet Union gave its warnings increased credibility.²²

The Threat Confirmed

The USSR announced and then proved its ICBM capability to the world with the

¹⁷ Ernest J. Yanarella, *The Missile Defense Controversy: Strategy, Technology, and Politics, 1955-1972* (Lexington Ky.: The University Press of Kentucky, 1977), 22.

¹⁸ Warren A. Trest, *Military Unity and National Policy: Some Past Effects and Future Implications*, CADRE Papers Special Series: The Future of the Air Force, Report Number AU-ARI-CPSS-91-7 (Maxwell AFB, Ala: Air University Press, 1991), 7.

¹⁹ OTA, "Ballistic Missile Defense Technologies,"⁴⁵ and K. Scott McMahon, *Pursuit of the Shield: The U. S. Quest for Limited Ballistic Missile Defense*, (New York: University Press of America, Inc., 1997), 13.

²⁰ Quoted in David L. Snead, *The Gaither Committee, Eisenhower, and the Cold War* (Columbus Oh.: Ohio State University Press, 1999), 44.

²¹ Snead, 44-47.

²² Ibid., 90.

launch of Sputnik in October 1957.²³ As a result, the official threat estimates changed drastically. National Intelligence Estimate 11-5-57 estimated the USSR could possibly have an intercontinental range missile available for operational use in 1960 or 1961.²⁴ “Absolute weapons coupled with intercontinental ballistic missile (ICBM) delivery systems now meant absolute U.S. vulnerability to a devastating surprise nuclear attack.”²⁵

The Gaither Committee presented its report only weeks after the launch and warned of the “inadequacy of U.S. defense measures designed to protect the civil population and the vulnerability of the country’s strategic nuclear forces in the event of a Soviet attack.”²⁶ The report called for increases in both active and passive defense measures to protect both retaliatory capabilities and the population.²⁷ Yet, despite increased emphasis on missile defense, not everyone believed a technological answer to the ballistic missile threat could be found.

A group of well-respected and well-positioned scientists opposed to missile defense began to emerge. By the mid-1950s, this group “generally believed it was impossible to intercept an ICBM because of its extremely high velocity...Intercepting a target moving at such a speed...was tantamount to hitting a bullet with another bullet.”²⁸ Additional concern was raised when, in 1958, the DoD’s Reentry Body Identification Group stated that multiple warheads could defeat Nike-Zeus, its radar was vulnerable, and nuclear explosions in the upper atmosphere would blind its radars.²⁹ Members of the President’s Science Advisory Committee supported these findings.³⁰

Those opposed to missile defense advocated continuing research and development to refine the technology before fielding it. Those supporting missile defense believed it

²³ Bruce-Briggs, 133.

²⁴ Donald P. Steury, 61.

²⁵ Kerry M. Kartchner, “Origins of the ABM Treaty,” in *Rockets’ Red Glare: Missile Defenses and the Future of World Politics*, eds. James J. Wirtz and Jeffrey A. Larsen (Boulder, Colo.: Westview Press, 2001), 30.

²⁶ *Ibid.*, 2.

²⁷ Security Resources Panel of the Science Advisory Committee, *Deterrence and Survival in the Nuclear Age*, Report to the President, November 1957, (Washington: U.S. Government Printing Office, 1976), 16-19.

²⁸ Baucom, 6. As found in Bell Laboratories, *ABM Research and Development at Bell Laboratories: Project History, October 1975* (study completed for the United States Army Ballistic Missile Defense Systems Command under contract DAHC60-71-C-0005), Part I, pp. I-5 - I-6, and I-11.

²⁹ Baucom, 21.

³⁰ McMahon, 15.

was important to procure and field a system, even though it might not be perfect, in order to improve it more quickly. Despite the increased threat represented by Sputnik, domestic opposition to missile defense within the scientific and political communities continued to grow. The ranks of those opposed to missile defense increased as additional Western scientists and intellectuals worked to develop arms control theory.³¹ These theories pushed the idea not of defending against the threat, but embracing it through the concept of nuclear deterrence by the mid-60s this concept matured into the concept of mutually assured destruction (MAD). According to the logic of MAD, an effective defensive capability raises the likelihood of nuclear war and is therefore destabilizing. Effective defense removes the threat of mutual destruction by protecting one side from a retaliatory attack, inviting that side to conduct a first strike. Likewise, the side without missile defense has an incentive to conduct a preemptive strike before a missile defense system becomes operational. The rise of nuclear deterrence theory did not end the search for defense against ballistic missiles. Congress continued to fund research and development and the Army and Air Force continued to conduct it.³²

The Office of the Secretary of Defense (OSD) attempted to eliminate duplication between the services and to centralize advanced research programs with the Defense Reorganization Act of 1958.³³ OSD created the Advanced Research Projects Agency and gave it “overall responsibility for all antimissile and earth satellite projects.”³⁴ The Army received the responsibility and budget for Nike-Zeus, while the Air Force’s role was restricted to “radar and data-handling.”³⁵ Money for Nike-Zeus expenditures continued to increase during the late 1950s.³⁶ The Army’s 1960 budget request included funds to procure the long lead-time items necessary for the programmed deployment of that system.³⁷ The Army continued to plan for deployment despite the lack of a successful intercept (the first was in December 1961).³⁸ Once again, domestic concerns became

³¹ Kartchner, 30.

³² Clark A. Murdock, *Defense Policy Formation: A Comparative Analysis of the McNamara Era*, (Albany N.Y.: State University of New York Press, 1974), 116.

³³ Murdock, 117

³⁴ Yanarella, 38-42.

³⁵ Murdock, 117, and Yanarella, 38-42.

³⁶ Murdock, 117.

³⁷ Ibid.

³⁸ Ibid.

important, as Secretary of Defense Neil H. McElroy withheld the funds Congress appropriated for production, although the Army did receive increased development funds.³⁹ Cost, technical concerns, and the growing popularity of arms control options ultimately prevented the Army from producing and fielding Nike-Zeus.⁴⁰

The Missile Gap

John F. Kennedy's 1960 presidential campaign focused on the growing perception of a missile gap, the fear that the Soviet Union had a substantial lead on the US in developing and deploying ICBMs.⁴¹ The missile gap debate resulted from several factors including a 1957 Democratic National Committee report charging President Eisenhower with complacency regarding the Soviet missile threat, Soviet bravado following the Sputnik launch, and media attention resulting from the launch and subsequent leaks about the Gaither report, which claimed the USSR would be able to destroy America's retaliatory capability with ICBMs by the early 1960's.⁴² Complicating matters, Kennedy challenged Eisenhower's defense policies, calling for more flexible defense options including an increased reliance on conventional forces in order to avoid escalating to the nuclear level.⁴³ In order to protect fledgling reconnaissance capabilities, Eisenhower was unwilling to release satellite photographs that would reveal the significantly overstated nature of the missile gap.⁴⁴ After President Kennedy's inauguration in January 1961, realizing that the missile gap favored the US rather than the USSR, the new administration made few initial changes in its approach to missile defense.⁴⁵ Like Eisenhower before him, Kennedy questioned both the technical feasibility and the cost of the Nike-Zeus program.⁴⁶ In April 1961, Secretary of Defense Robert S. McNamara recommended \$270 million for research and development, but refused to recommend deployment funds because of concerns that the system was vulnerable to decoys,

³⁹ Ibid.

⁴⁰ Benson D. Adams, *Ballistic Missile Defense*, (New York: American Elsevier, 1971), 36.

⁴¹ Peter J. Roman, *Eisenhower and the Missile Gap*, (Ithaca N.Y.: Cornell University Press, 1995), 141.

⁴² Edgar M. Bottome, *The Missile Gap: A Study of the Formulation of Military and Political Policy*, (Cranbury, N.J., Associated University Presses, Inc., 1971), 30-61.

⁴³ Richard Lee Walker, "Strategic Target Planning," *National Security Affairs Monograph Series 83-9* (Washington: National Defense University Press, 1983), 4.

⁴⁴ Ibid., 148.

⁴⁵ Roman, 194 and Walker, 4.

⁴⁶ Baucom, 17.

jamming, and saturation.⁴⁷

Despite the administration's feasibility concerns, Nike-Zeus tests were beginning to achieve success. Between June 1962 and November 1963, the system achieved nine complete and three partial successes against Atlas and Titan ICBMs.⁴⁸ Despite these successes, the Kennedy Administration continued to doubt the technical feasibility and affordability of the Nike-Zeus system. The primary concern, voiced by Secretary McNamara was, "that it would cost the United States considerably more to offset Soviet missiles than it would cost the Soviets to deploy them."⁴⁹ By 1963, McNamara decided to pursue the next generation Nike-X rather than deploying a system that would be obsolete by the early 1970s.⁵⁰ The Nike-X program included continued development of the Zeus missile by upgrading it to the next generation Spartan, developing the short-range, high-acceleration Sprint, and developing advanced radars to cue them.⁵¹ The Nike-X system was the first US system based on a layered defense concept.

Secretary McNamara's thinking went through several stages as he refined his views on missile defense and nuclear strategy, and he increasingly supported the concepts of arms control and MAD.⁵² The portion of the scientific community opposed to missile defense also continued to make their voices heard. The Federation of Atomic Scientists came out in 1964 against missile defense because they believed it reduced stability.⁵³ According to this view, the US and USSR faced a "dilemma of steadily increasing military power and steadily decreasing national security. *It is our considered professional judgment that this dilemma has no technical solution* (emphasis in original)."⁵⁴

Despite growing opposition, deployment of a missile defense system looked promising by the mid 1960s.⁵⁵ Many Americans, however, were unaware of the entire

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ OTA, "Ballistic Missile Defense Technologies," 45.

⁵⁰ House, *Department of Defense Appropriations for Fiscal 1964, Hearings before a Subcommittee of the Committee on Appropriations*, 88th Cong., 1st sess., 1963, pt. 1:125.

⁵¹ Ibid., 125-126.

⁵² Yanarella, 51.

⁵³ Bruce-Briggs, 255-256.

⁵⁴ Jerome B. Weisner and Herbert F. York, "National Security and the Nuclear-Test Ban." *Scientific American* 211, no. 4 (October 1964): 35.

⁵⁵ McMahon, 19.

debate. A 1964 public opinion poll revealed that two-thirds of the respondents thought the US already had an ABM system in place.⁵⁶ Administration officials continued to defer deployment decisions, and by 1966, the list of reasons not to field the Nike-X system included the high cost of the Vietnam War, opposition from the scientific community, Congressional apathy towards the passive defense measures needed to protect the population from radioactive fallout caused by the nuclear-tipped interceptors, and improving relations with the Soviet Union.⁵⁷

As nuclear strategy evolved through the mid 1960s, so too did the threat. In addition to the growing Soviet threat, China's first nuclear explosion in October 1964 reintroduced the possibility of a small and unsophisticated threat to the US, something often called the "Nth country threat."⁵⁸ This new threat caused Secretary McNamara to reconsider the role of Nike-X.⁵⁹ Although he doubted its technical ability against a large number of missiles, its capability was worth considering against the limited attack scenario China represented. The Defense Department began to consider fielding Nike-X using a building block approach; the system would initially meet the Nth country threat and could later be expanded to meet other threats, such as that posed by the USSR.⁶⁰

Pressure on the Johnson Administration to deploy a missile defense grew throughout the late 1960s.⁶¹ There was unambiguous evidence that the Soviets were deploying an ABM system, Congress continued to vote money to deploy Nike-X despite the Administration's objections, and the JCS supported the building block deployment approach in order to "reduce casualties in the event of full-scale nuclear war with the Soviet Union."⁶²

McNamara proposed a compromise position. He suggested that Johnson invite the Soviets for arms control talks while simultaneously asking for money in the FY 1967 budget for missile defense deployment in the event arms control negotiations failed.⁶³

⁵⁶ R.H. McMahan, Jr., R.E. Ehrlich, and A.T. Ewald, *Public Opinion and Ballistic Missile Defense* TEMPO Report RM 64TMP-50 (Santa Barbara Calif.: General Electric Company, September 1964), 7.

⁵⁷ Baucom, 26.

⁵⁸ Ibid., 25.

⁵⁹ Ibid.

⁶⁰ Baucom, 25.

⁶¹ Adams, 117.

⁶² OTA, "Ballistic Missile Defense Technologies," 46.

⁶³ Baucom, 31.

Johnson agreed to the plan, and the administration set about implementing it in late 1966.⁶⁴ In December, Secretary of State Dean Rusk publicly expressed hope that Washington could reach agreement with Moscow not to deploy ABM and to stop the arms race. President Johnson, in his 1967 State of the Union address, discussed pursuing an agreement with the USSR not to deploy ABM. Additionally, the January President's Budget called for \$375 million to deploy missile defense in the event negotiations failed. Finally, in June 1967 at the Glassboro summit, Johnson approached the Soviets with the idea of banning ABM systems. When McNamara explained the logic of assured destruction and the dangers of defensive systems, Premier Aleksei Kosygin discounted it by stating simply, "Defense is moral, offense is immoral!"⁶⁵ Failure to engage the Soviets in negotiations meant the stage was set for the deployment of a missile defense system.

On 18 September 1967, speaking to the editors of United Press International in San Francisco, Secretary of Defense McNamara carefully made the case against a missile defense system designed to meet the Soviet threat.⁶⁶ According to McNamara, if "the Soviets decide to expand their ABM deployment, our response must be realistic. There is no point whatever in our responding by going to a massive ABM deployment to protect our population when such a system would be ineffective against a sophisticated Soviet offense. Instead, realism dictates that we then must further expand our sophisticated offensive forces and thus preserve our overwhelming assured-destruction capability."⁶⁷ McNamara went on to announce the administration's decision to field a missile defense system to counter the Chinese threat.⁶⁸ He justified the decision by explaining that it was a thin area defense against the Chinese threat, that it would provide additional defense for the Minuteman sites, and that it would be effective against accidental launches. McNamara ended his speech by warning against the temptation to expand this thin

⁶⁴ Ibid., 34.

⁶⁵ Ibid.

⁶⁶ "Text of McNamara Speech on Anti-China Defense and U.S. Nuclear Strategy," *New York Times*, Tuesday, 19 September 1967, 18.

⁶⁷ Robert S. McNamara, *The Essence of Security: Reflections in Office*, (New York: Harper and Row, 1968), 66. (primary source 18 Sep 67 speech)

⁶⁸ McNamara Speech, 19 September 1967, 18.

system into a heavy system against the Soviet threat. Nike-X was now Sentinel.⁶⁹

As conceived, the Sentinel system consisted of 17 sites, including one each in Alaska and Hawaii.⁷⁰ Ten of the 15 continental sites were in or near major US cities.⁷¹ As the Army began the site survey work to construct the system, grassroots opposition began to take shape. Time Magazine captured the tone of this opposition when it reported: “In areas where ABM facilities might be situated, there have been angry citizens’ meetings and demonstrations that the Pentagon’s representatives have been unable to nullify. The protesters resent such use of desirable sites, fear that the missiles might be unsafe and, furthermore, insist that their presence would make the host community a special target for the enemy in the event of war.”⁷² Public opposition soon gained support from other missile defense opponents in the scientific, academic, and intellectual communities. Together they created enough pressure to influence President Nixon to reconsider plans for Sentinel deployment.⁷³

The Nixon Administration requested a program review immediately after taking office in January 1969.⁷⁴ The President opted to refocus Sentinel from the thin city defense that the Johnson Administration envisioned to a system designed to meet three objectives: protect ICBMs against direct attack by the USSR, defend the population against an Nth country attack, and finally, protect against accidental launches.⁷⁵ The program was renamed Safeguard to emphasize the changed objectives.⁷⁶

Nixon’s announcement ushered in the ABM debate of 1969. The ongoing Congressional battles regarding deployment were just one aspect of the widening debate on missile defense. Congress had become concerned about missile defense in the early 1960s when money appropriated for it and other major defense programs went unspent, and many Congressional members now believed their traditional roles and

⁶⁹ Baucum, 36. The term Nike-X continued to be used for ongoing research efforts.

⁷⁰ Adams, 177.

⁷¹ Ibid 177.

⁷² “The ABM: A Nuclear Watershed,” *Time* 93, no. 11 (Mar 14, 1969): 22.

⁷³ Adams, 246.

⁷⁴ “Text of President Nixon’s Announcement on Revised Proposals for Sentinel Antiballistic Missile Program,” *New York Times*, 15 March 1969, 17.

⁷⁵ Ibid.

⁷⁶ Bruce-Briggs, 299.

responsibilities were eroding.⁷⁷ These concerns, combined with growing public discontent with the Vietnam War in particular and the government in general, caused ABM to become a symbol of all that was wrong with big government.⁷⁸ The debate culminated on 6 August 1969 with the Senate vote on the Hart-Cooper Amendment.⁷⁹ If passed, the amendment would delete Safeguard deployment authority while retaining funds for research, development, and testing.⁸⁰ Under Senate rules, the resulting 50-50 tie vote automatically defeated the Amendment, however, Vice President Spiro Agnew elected to vote, making the final count 50 for and 51 against, so Safeguard deployment proceeded.⁸¹

President Nixon's strategic arms policy revolved around the desire to improve the nation's strategic force structure, including missile defense, so that he could negotiate with the Soviets from a position of strength.⁸² The Hart-Cooper Amendment defeat, therefore, strengthened the President's position in future arms control talks with the Soviet Union.⁸³ Once the Congressional debate over missile defense was resolved, the USSR offered to negotiate, and on 25 Oct 1969, Nixon announced acceptance of a Soviet invitation for exploratory strategic arms talks.⁸⁴ As the talks continued through 1970, funding for Safeguard continued, but many in the administration viewed it solely as a bargaining chip for the ongoing arms control talks.⁸⁵ The system, however, remained virtually undeployable because of continuing public opposition. On the eve of the ABM (Anti-Ballistic Missile) Treaty, domestic opposition continued against missile defenses, and the technology was generally accepted by decision makers as only capable against a small and unsophisticated threat as represented by China.

⁷⁷ Yanarella, 148.

⁷⁸ Claude Witze, "The ABM Showdown: Rationality Wins by a Single Vote," *Air Force and Space Digest* 52, no. 9 (September 1969): 46.

⁷⁹ Baucom, 54.

⁸⁰ Bruce Cossaboom, "The ABM Vote," *Armed Forces Journal* 106, no.47 (26 July 1969): 10.

⁸¹ Baucom, 50.

⁸² Ibid., 53-54.

⁸³ Witze, 50.

⁸⁴ Baucom, 54.

⁸⁵ Bruce-Briggs, 325-326 and James J. Wirtz and Jeffrey A. Larsen eds., *Rockets' Red Glare: Missile Defenses and the Future of World Politics*, (Boulder, Colo.: Westview Press, 2001), 25.

The Anti-Ballistic Missile Treaty

Following years of negotiations, the US signed the ABM Treaty with the Soviet Union on 26 May 1972.⁸⁶ In it, each side agreed “not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.” The treaty was of unlimited duration (although reviewed every five years) and each side retained the right to withdraw with six months notice if its “supreme interests” were jeopardized. On the same day, Strategic Arms Limitation Talks (SALT I) Interim Agreement was signed, freezing land-based ICBMs at the levels reached on each side as of 1 July 1972.⁸⁷ “From the U.S. perspective, the SALT I agreements effectively institutionalized the doctrine of mutual assured destruction (MAD), for while placing severe and strict limitations on ABM systems, they set no comparable restrictions for offensive systems.”⁸⁸ MAD had its origins in Bernard Brodie’s landmark work *The Absolute Weapon*, published in 1946. In it he outlined the concept of absolute vulnerability and its key concepts: no defense against the bomb existed or could be created, cities were the only logical targets, military superiority did not matter as long as the other side had enough to destroy you, and the purpose of armed forces had changed from warfighting to deterrence.⁸⁹

During ABM Treaty negotiations, US representatives ensured Safeguard remained compliant, and consequently, deployment continued.⁹⁰ The system protected the 150 missiles in the Grand Forks missile complex and provided limited area defense of the central US.⁹¹ However, the momentum for missile defense had died. Restricted to a single site that could provide only limited protection for a small portion of the offensive force structure and population, the decision to shutdown the site was only a matter of time. After discovering that the Defense Department planned to close the site in two years, its inability to cope with the growing Soviet threat, and other technology concerns,

⁸⁶ “Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Limitation Of Anti-Ballistic Missile Systems,” 26 May 1972, n.p., on-line, Internet, 22 April 2002, <http://www.state.gov/www/global/arms/treaties/abm/abm2.html>.

⁸⁷ Baucom, 70.

⁸⁸ Ibid., 71.

⁸⁹ Kerry M. Kartchner, 29.

⁹⁰ Baucom, 91.

⁹¹ Ibid., 92.

Congress voted to close it one day after it achieved operational status.⁹²

Closing the Safeguard site did not completely end the Army's interest in missile defense.⁹³ However, the emphasis, shifted "from developing deployable systems to research and development aimed at maintaining America's technological edge in the area of missile defenses and to hedge against a possible Soviet breakthrough." Instead of defense, reliable and survivable command, control, and communications (C3) became critical to enable battle management during a nuclear exchange and thereby assure destruction.⁹⁴ Missile Defense expenditures fell from approximately \$1 billion per year (in 1980 dollars) during the 1960s, to less than \$100 million per year by 1980.⁹⁵ Ultimately, the ABM Treaty became an international norm against missile defense, and every dimension of the decision to field an operational system was seen as negative. The threat was too large, technology was not good enough, and it was domestically unacceptable to deploy missile defenses.

The Strategic Defense Initiative

President Reagan's March 1983 Strategic Defense Initiative (SDI) speech attempted to put the focus of national defense strategy on protecting people instead of relying on deterrence and the logic of MAD.⁹⁶ His vision went beyond protecting Americans; he also believed that Soviet citizens had a right to defend themselves. Reagan's vision represented a complete rejection of MAD and the search for "a new strategic and political relationship between the superpowers."⁹⁷ His vision included developing defensive capabilities while at the same time continuing offensive reductions.⁹⁸

Reagan's road to SDI began in the 1970s. During an unplanned speech at the

⁹² Ibid., 96.

⁹³ Ibid., 97.

⁹⁴ Bruce-Briggs, 361-363.

⁹⁵ E.C. Aldridge, Jr., and Robert L. Manst, Jr., "SALT Implications of BMD Options," in *U.S. Arms Control Objectives and the Implications for Ballistic Missile Defense*, ed. Michelle Marcouiller (Cambridge, Mass: Center for Science and International Affairs, 1980), 55-56.

⁹⁶ Bruce-Briggs, 431.

⁹⁷ Robert G. Joseph, "The Role of Nuclear Weapons in US Deterrence Strategy," in *Deterrence in the 21st Century*, ed., Max G. Manwarring (Portland, Oreg.: Frank Cass, 2001), 61.

⁹⁸ Keith B. Payne, *Missile Defense in the 21st Century: Protection Against Limited Threats Including Lessons From the Gulf War* (Boulder, Colo.: Westview Press, 1991), 5.

1976 Republican convention, he expressed his strong dislike for offensive based nuclear deterrence, challenging everyone to find a way to keep the world from nuclear destruction.⁹⁹ A tour of NORAD in 1979 further refined his views.¹⁰⁰ After touring the facility and receiving briefings on its tracking and warning capabilities, he was sobered to realize that there was no protection for US citizens against missile attacks. A few days later, his campaign staff produced Policy Memorandum Number 3, a proposal for a new updated missile defense system. He continued that effort after taking office in 1981 by establishing an ad hoc group consisting of members of his staff, scientists specializing in defense technology, and military experts to determine the feasibility of pursuing missile defense.¹⁰¹ On 8 January 1982, the group briefed the President that missile defense was both possible and affordable.¹⁰² Reagan responded favorably, and all that remained was to determine when to go ahead with the concept. When, in early 1983, the JCS “adopted a position...that called for a new concept of deterrence with greater emphasis on strategic defense,” Reagan knew the time was right.¹⁰³

Reagan’s 1983 speech began a revival of interest in and money for ballistic missile defense research and development. Following a year of studying how best to implement the President’s plan, the Defense Department created the Strategic Defense Initiative Organization (SDIO) to conduct research and development.¹⁰⁴ The SDIO conducted research into a wide variety of technological possibilities through the remainder of the 1980s. Advances were made in areas such as lasers, miniaturization, and computer processing. However, before developers could employ any of these advances in missile defense systems and bring those systems to the deployment decision point, the Cold War world and SDI began to come apart.

The Cold War Ends

By 1991, the end of the Cold War and the diminishing Soviet threat put more

⁹⁹ Martin Anderson, *Revolution* (San Diego Calif.: Harcourt Brace Jovanovich, 1988), 70-71.

¹⁰⁰ Anderson, 80.

¹⁰¹ Ibid., 94-95.

¹⁰² Ibid., 96.

¹⁰³ Baucom, 140.

¹⁰⁴ Council for a Livable World Education Fund, “Briefing Book on Ballistic Missile Defense,” September, 2001, 178, on-line, Internet, 15 February 2002, available from <http://www.clw.org/nmd/nmdbook01.pdf>, 6.

focus on new threats, such as the proliferation of weapons of mass destruction (WMD) and the potential for accidental or unauthorized launch.¹⁰⁵ Former CIA director James Woolsey captured the essence of the new threat in 1993, “we have slain a large dragon. But we live now in a jungle filled with a bewildering variety of poisonous snakes, and in many ways, the dragon was easier to keep track of.”¹⁰⁶ The Iraqi Scud attacks during the Gulf War served as a warning of things that might come. SDI would have eventually required the US to withdraw from the ABM Treaty, but the lessening of the Russian threat meant that the US no longer needed to focus on a robust, national-level system. Now American planners could turn their attention to developing a limited system capable of protecting against smaller-scale strikes anywhere on the globe. The George H. W. Bush Administration, therefore, reoriented the goal of SDI and called the new architecture Global Protection Against Limited Strikes (GPALS).¹⁰⁷

The Clinton Administration reduced the goal of missile defense even further in 1993 by eliminating its global aspects and making defense against shorter-range theater missiles its number one priority.¹⁰⁸ The threat assessments of the mid-1990s justified the Clinton Administration’s stance. The 1995 National Intelligence Estimate found there was no threat to the continental US or Canada before 2010 and that there would be time for intelligence agencies to detect development in time to take action.¹⁰⁹ National missile defense remained unacceptable internationally as long as the ABM Treaty remained in effect. Theater missile defense systems, however, were accepted both domestically and internationally, and informed citizens in the US and other developed nations believed the technology was worth pursuing to provide protection for deployed troops.

The Rumsfeld Report

The 1998 Commission to Assess the Ballistic Missile Threat, chaired by Donald Rumsfeld, disagreed with the 1995 NIE, finding that there was an alarming proliferation

¹⁰⁵ Joseph, 62.

¹⁰⁶ Payne, *Deterrence in the Second Nuclear Age*, 14, as quoted from Statement before the Senate Select Committee on Intelligence, 2 February 1993, 2 (mimeographed).

¹⁰⁷ Payne, *Missile Defense in the 21st Century*, 13.

¹⁰⁸ “SDI Era Over, But the Threat Still Remains,” *The Officer* 69, no. 6 (June 1993): 29.

¹⁰⁹ Wirtz and Larsen, 4.

problem.¹¹⁰ North Korea, Iran, Iraq, China, and Russia were exporting technology, and this increased the risk that ballistic missiles could be launched against the US, possibly with little warning. The validity of the 1995 NIE was again put in doubt when Korea launched a 3-stage missile in 1998, demonstrating intercontinental range and the staging technology necessary for an ICBM capable of reaching the US.¹¹¹ The 1999 National Intelligence Council Report entitled “Foreign Missile Development and Ballistic Missile Threat to the United States through 2015” found that proliferation “has created an immediate, serious, and growing threat to U.S. forces, interests, and allies, and has significantly altered the strategic balances in the Middle East and Asia.”¹¹²

Concerns about the rising threat prompted Congress to take action. They had already passed the National Defense Authorization Act for Fiscal Year 1996, establishing “as policy the deployment of missile defenses [TMD] to protect U.S. forward-deployed troops and U.S. allies against shorter-range missiles.”¹¹³ By 1999, Congress demanded national level systems in addition to the existing theater systems, and it passed the National Missile Defense Act of 1999, calling for the US to deploy effective national missile defenses “as soon as is technologically possible.”¹¹⁴

Meanwhile domestic attitudes regarding NMD were moving towards toleration in some quarters and to acceptance in others. Additionally, technological breakthroughs and the fact that the threats against which defensive systems would be directed were small, renewed optimism that missile defense would soon be feasible.

¹¹⁰ Ibid.

¹¹¹ Ibid.

¹¹² “Foreign Missile Developments and the Ballistic Missile Threat Through 2015.” September 1999, n.p., on-line, internet, 28 May 2002, available from http://www.cia.gov/nic/pubs/other_products/foreign_missile_developments.htm.

¹¹³ Baker Spring, “Defending America from Missile Attack,” in *Priorities for the President*, ed., Stuart M. Butler and Kim R. Holmes, (Washington D.C.: Heritage Foundation, 2001), 17, available from <http://www.heritage.org/mandate/priorities/pdf/priorities-new.pdf>.

¹¹⁴ Joseph, 55.

Chapter 3

Bush's New Strategic Framework

The George W. Bush Administration came to office in 2001 with the goal of fundamentally changing the “balance of terror mentality” that he said existed during the Cold War and continued to operate for years after it ended. On 1 May 2001, in a speech to the students and faculty at the National Defense University, President Bush called for a move away from the Cold War theories of massive retaliation codified by the ABM Treaty, and towards a new strategic framework based on “active nonproliferation, counterproliferation and defenses.”¹¹⁵

He also called for a new concept of deterrence based not just on offensive forces, but on both offensive and defensive forces. He asserted that defensive forces “can strengthen deterrence by reducing the incentive for proliferation.” He also announced the US commitment to “change the size, the composition, the character of our nuclear forces,” and to “exploring technologies and basing modes to determine what form defenses will take, and when they will be deployed.” Additionally, the President promised to conduct that exploration in conjunction with Congress and with friends and allies facing similar threats. The President closed by stating, “I want to complete the work of changing our relationship from one based on a nuclear balance of terror, to one based on common responsibilities and common interests.”¹¹⁶

Following the speech, the Bush Administration sent representatives to allied capitals in Europe, Asia, Australia, and Canada to begin discussing methods of creating the envisioned framework.¹¹⁷ The primary reason for the visits was to convince friends and allies to “look at deterrence in a new way.”¹¹⁸ The arguments the Administration used on these visits are typified by a lecture State Department representative Dr. Kerry

¹¹⁵ President George W. Bush, Remarks by the President to Students and Faculty at National Defense University, Fort Lesley J. McNair, Washington, D.C., 1 May 2001, available from <http://www.whitehouse.gov/news/releases/2001/05/print/20010501-10.html>.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ “Missile Defense Topic at Pentagon Spokesman’s Briefing,” 15 May 2001, n.p., on-line, Internet, available from <http://www.usinfo.state.gov/topical/pol/arms/stories.01051509.htm>.

Kartchner delivered in December 2001 where he identified several reasons former approaches to deterrence may not always be adequate against the current threat.¹¹⁹ These factors include the assertion that leaders of rogue states are potentially more risk prone, that there are fewer communication channels to reach them, that their cultural values are not always well understood, that the stakes involved may be asymmetrical, and finally because leaders of rogue states may think there is more to lose by not acting.¹²⁰ The trips to consult with allies began in early May 2001, and by mid-May Pentagon spokesman, Admiral Craig Quigly, when asked the status of the trips, responded that reactions to the proposals were mixed.¹²¹ He noted that views were clearly exchanged and concerns noted, although they tended to vary from country to country.¹²² Finally he stressed that the consultative process was iterative and that the views and concerns raised during the discussions would be factored into the Administration's thinking.¹²³

Speaking at the National Press Club on 12 July 2001, Bush's National Security Advisor, Condoleezza Rice, stressed that the continuing discussions with the allies and Congress were proving to be "substantive, respectful and educational."¹²⁴ On the same day, Lieutenant General Ronald T. Kadish, Director of the Ballistic Missile Defense Organization, laid out the Bush platform for missile defense during testimony before the Senate Armed Services Committee.¹²⁵ The goal of missile defense is to develop a "layered defense that provides multiple engagement opportunities along the entire flight path of a ballistic missile."¹²⁶ In contrast to the theater and national missile defense phases begun in the early 1990s, program emphasis shifted to building on technical progress by fully funding development and testing, aggressively pursuing integration of air-, land-, sea-, and space-based systems to build an effective layered missile defense,

¹¹⁹ Dr Kerry M. Kartchner, "Missile Defense, the ABM Treaty, and the New Strategic Framework," Lecture, Air War College, Maxwell AFB, AL., 19 December 2001.

¹²⁰ Ibid.

¹²¹ "Missile Defense Topic at Pentagon Spokesman's Briefing."

¹²² Ibid.

¹²³ Ibid.

¹²⁴ "Rice Argues for New Concept of Deterrence," 12 July 2001, n.p., on-line, Internet, available from <http://usinfo.state.gov/topical/pol/arms/stories/01071205a.htm>.

¹²⁵ "Missile Defense Director Kadish Outlines Evolving Program," 12 July 2001, n.p., on-line, Internet, 20 March 2002, available from <http://www.usinfo.state.gov/topical/pol/arms/stories.01071302.htm>.

¹²⁶ Ibid.

and conducting more realistic test scenarios.¹²⁷ Kadish went on to stress that the new program does not define a specific architecture, or procurement or deployment dates.¹²⁸ Flexibility designed into the program will allow deployment of various weapons and sensors as needed to meet evolving threats.¹²⁹ The loss of distinction between national missile defense (NMD) and theater missile defense (TMD) had far reaching implications for the ABM Treaty, and the Bush Administration made clear its belief that the treaty would have to be changed or abandoned altogether as testing for the new programs came closer and closer to violating its intent.¹³⁰ As the Administration began working with Russia to determine the future of the treaty, it stressed that it no longer viewed Russia as an enemy and there should be a better way for the two countries to work together, both on the missile defense issue and on arms reductions.¹³¹ National Security Advisor Condoleezza Rice stressed that offensive and defensive measures are related since “they are both elements of a new way of security, which is lower levels of offensive forces on lower stages of alert, so that there's less danger of accident, or unauthorized release, missile defenses aimed at specific limited threats, and that we get out of a force structure that really came out of a time when we worried about a Soviet march across Europe that would lead then to nuclear war.”¹³²

The projected threat has changed significantly from the 1995 National Intelligence Estimate (NIE). The unclassified version of the National Intelligence Update for 2002, published in December 2001 (first available in classified form in September 1999), forecasts that by 2015 the US will likely face ICBM threats from North Korea, Iran, and possibly Iraq unless their political orientations change significantly.¹³³ It also finds US interests, forces, and allies already face significant overseas threats from short-

¹²⁷ Ibid.

¹²⁸ Ibid.

¹²⁹ Ibid.

¹³⁰ “Wolfowitz says U.S. Will Move Beyond ABM Treaty,” 12 July 2001, n.p., on-line, Internet, 20 February 2002, available from <http://www.usinfo.state.gov/topical/pol/arms/stories/01071202.htm>.

¹³¹ “Powell seeks New Strategic Framework with Russia,” 17 July 2001, available from <http://www.usinfo.state.gov/topical/pol/arms/stories/01071801.htm>.

¹³² “Rice says Bush, Putin ‘Moved Forward’ on New Strategic Framework,” 22 July 2001, n.p., on-line, Internet, 20 February 2002, available from <http://www.usinfo.state.gov/topical/pol/arms/stories/01072209.htm>.

¹³³ National Intelligence Council, “Foreign Missile Developments and the Ballistic Missile Threat Through 2015”, December 2001, n.p., on-line, Internet, 11 January 2002, available from http://www.cia.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm.

and medium-range ballistic missiles. While projecting Russia's nuclear forces will decline with or without arms control, it predicts that China will likely increase its nuclear forces several times over, although those forces will remain less capable than those of the US or Russia. The report also notes that nonstate actors such as terrorists, insurgents, and extremist groups have expressed an interest in weapons of mass destruction. Finally, the report states that the chance "a missile with a weapon of mass destruction will be used against *US forces or interests* is higher today than during the Cold War, and will continue to grow as the capabilities of potential adversaries mature."¹³⁴

The Quadrennial Defense Review Report published 30 September 2001 documented the US military's role in meeting those threats. It stated, "The highest priority of the U.S. military is to defend the Nation from all enemies. The United States will maintain sufficient military forces to protect the U.S. domestic population, its territory, and its critical defense-related infrastructure against attacks emanating from outside U.S. borders, as appropriate under U.S. law, U.S. forces will provide strategic deterrence and air and missile defense and uphold U.S. commitments under NORAD."¹³⁵ This report moves beyond its predecessor by calling not just for research and development but for deployment of missile defense.

In order to implement the directed changes to the missile defense program, Secretary of Defense Donald H. Rumsfeld announced the redesignation of the Ballistic Missile Defense Organization (BMDO) as the Missile Defense Agency (MDA) on 4 January 2002.¹³⁶ This change reflected the increased emphasis on missile defense by the Bush Administration. The Secretary also provided the direction necessary to meet the top four priorities, including employment of layered defenses to intercept missiles in all phases of their flight against all ranges of threats, fielding elements of the overall system as soon as practicable, developing and testing technologies, and using prototype and test assets to provide early capability, if necessary.¹³⁷ In order to meet these priorities, the Agency will pursue what it calls promising technologies such as kinetic and directed

¹³⁴ National Intelligence Council, December 2001.

¹³⁵ Department of Defense, "Quadrennial Defense Review Report," 30 September 2001, 71, on-line, Internet, 19 February 2002, available from <http://www.defenselink.mil/pubs/qdr2001.pdf>, 18.

¹³⁶ "E A Digest 7 January 02," *Missile Defense Agency External Affairs Digest*, e-mail digest available by subscription from external.affairs@bmdo.osd.mil.

¹³⁷ Ibid.

energy kill mechanisms and various deployment options including land, sea, and air to “hasten the fielding date of an effective, reliable, and affordable system.”¹³⁸ The final goal is to develop and deploy missile defenses that “will meet the growing threat and provide the earliest possible fielding date of effective defensive capabilities.”¹³⁹

The congressional response to the President’s speech split along party lines. Representative Richard Gephardt, the House Minority Leader, speaking for the Democratic opposition, claimed the President “by announcing his intent to move forward with as yet unproven, costly and expansive national missile defense systems” was “jeopardizing an arms control framework that has served this nation and the world well for decades.”¹⁴⁰ Democrats also made clear that the Bush missile defense plans could become “a defining point of contention between the two parties.”¹⁴¹ The issue had the potential of another debate not unlike the one played out in 1969.

Public support for the concept tends to be strong unless fielding a system “means diverting substantial resources from other pressing societal needs, building a system that works poorly, or aggravating international tensions.”¹⁴² An ABC/Washington Post survey conducted 11-15 January 2000 reflected that 80 percent of the respondents supported building a missile defense system.¹⁴³ Of those supporting missile defenses, 37 percent said they would oppose it if the cost were between \$60 and 100 billion, while 33 percent claimed they would oppose it if scientists raised doubts about its ability to completely protect the US. Finally, 39 percent said they would oppose it if it would create a new arms race.¹⁴⁴ According to a CBS News/New York Times poll from conducted 9 through 11 September 2000, 14 percent of respondents did not know if the

¹³⁸ Missile Defense Agency, “Ballistic Missile Defense Approach Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, <http://www.acq.osd.mil/bmdo/bmdolink/pdf/approach.pdf>. For information on projected test and deployment dates of the various components, see the specific fact sheet at the same web site.

¹³⁹ Ibid.

¹⁴⁰ Marc Lacey, “Major Address on Missiles Buys Republicans, but Fails to Win Over Bush’s Opponents,” *New York Times*, 2 May 2001, A11.

¹⁴¹ Alston Mitchell, “Top Democrats War of Battle on Missile Plan,” *New York Times*, 3 May 2001, A1.

¹⁴² James M. Lindsay, “Is the Third Time the Charm? The American Politics of Missile Defense,” July – September 2001, n.p., on-line, Internet, 19 February 2002, available from <http://www.brook.edu/dybdocroot/views/articles/lindsay/2001etrangere.htm>.

¹⁴³ “America’s Global Role: Major Proposals,” 15 May 2002, n.p., on-line, Internet, 21 February 2002, available from http://www.publicagenda.org/issues/major_proposals_detail.cfm?issue_type=americas_global_role&list=11.

¹⁴⁴ Ibid.

US possessed a missile defense system and 58 percent believed the US already had a system in place.¹⁴⁵ The US public remained largely indifferent to threats against their homeland until the World Trade Center bombing on 11 September 2001 confirmed that there are those who are willing and able to use weapons of mass destruction against America and its citizens.

Impact of Terrorist Attacks on Bush's Missile Defense Plan

The terrorist bombings that destroyed the World Trade Center on 11 September 2001 did not stop the debate about missile defense. If anything, they reopened the debate about possible threats to the US. Although the 1999 NIE came out two years before the attacks and recognized the potential for such an attack, it focused on traditional weapons of mass destruction (WMD) rather than on the unconventional nature of the actual attack. "Several other means to deliver weapons of mass destruction to the United States have probably been devised, some more reliable than ICBMs that have not completed rigorous testing programs. For example, biological or chemical weapons could be prepared in the United States and used in large population centers, or short-range missiles could be deployed on surface ships. However, these means do not provide a nation the same prestige and degree of deterrence or coercive diplomacy associated with ICBMs."¹⁴⁶ Because of the unconventional nature of the attack, questions were raised about the nature of the threat facing the US. One side of the debate claims that missile defense would not have stopped the airplanes from hitting the towers and that terrorists will continue to use similar low technology methods to strike the US, making missile defense unnecessary and a waste of money that could be better spent on other methods of homeland defense. As Representative John F. Tierney (D- Mass) put it, "This type of incident ... is much higher on the list of threats than anything the president would address with his national missile defense program."¹⁴⁷ Senator Carl Levin (D-Mich) raised this

¹⁴⁵ "CBS News/New York Times Poll, September 9-11, 2000, Campaign 2000," n.p., on-line, Internet, available from <http://cbsnews.cbs.com/htdocs/c2k/sepaallb.htm>.

¹⁴⁶ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," September 1999, n.p., on-line, Internet, 27 February 2002, available from <http://www.cia.gov/cia/publications/nie/nie99msl.html>.

¹⁴⁷ John Lancaster and Greg Schneider, "Foreign Policy Consequences Huge: Missile Shield, Mideast, Security Likely to Be Influenced," *Washington Post*, 13 September 2001, A22.

very issue during a hearing before the International Security, Proliferation, and Federal Services Subcommittee of the Committee on Governmental Affairs in February 2000, saying, “Now, I don't think there has been enough attention paid to the entire mix. I think it is important that we see what all the threats are, the range of threats, including missiles, but that we also understand the most likely threats, what would defend against them and where our resources are being placed, as well as what the impact of those means of delivery are because that is also important. It is not just that a truck is more likely than a missile but what would be the impact if it were a missile, rather than a truck--that also has to be put into the calculus. But there hasn't been nearly enough attention paid to that portion of what you are telling us, it seems to me, as to the missile part of what our report focused on.”¹⁴⁸

The other side of the debate is captured by Baker Spring, an F.M. Kirby Research Fellow in National Security Policy in the Kathryn and Shelby Cullom Davis Institute for International Studies at The Heritage Foundation. Spring identifies nine reasons he believes missile defense remains important:

1. There is a moral obligation to provide a “balanced national security policy that addresses the full array of threats to American lives, including the expanding threat posed by ballistic missiles.”
2. There is no homeland defense without missile defense.
3. There is no current defense against missile attack.
4. Missile attack will be far more destructive than the September 11 assaults.
5. Terrorist groups, not just states, have the means to buy ballistic missiles.
6. Missile defenses are needed to shield the US from retaliation should it take action against terrorist-harboring states.
7. Terrorist missile attacks cannot be deterred.
8. “Nuclear retaliation is not appropriate for every kind of attack against America.”

¹⁴⁸ Senate, The National Intelligence Estimate On The Ballistic Missile Threat To The United States, Hearing before the *International Security, Proliferation, And Federal Services Subcommittee Of The Committee On Governmental Affairs*, 106th Cong., 2d sess., 9 February 2000, 163 pages, on-line, Internet, available from http://www.senate.gov/~gov_affairs/020900_ispfs-md.pdf, 16.

9. "The United States simply cannot afford *not* to address both the missile threat and terrorism."¹⁴⁹

Philip H. Gordon and Michael O'Hanlon, Senior Fellows at the Brookings Institute, take the argument a step further by looking at the type of missile defense they see as appropriate. In their view, "the attacks reinforce the case for missile defense, but only for a defense limited in size and scale, and deployed in a way that does not threaten other great powers...The lesson of the terrorist attacks is not that the U.S. should abandon all missile defense plans. Rather, it should pursue a limited long-range missile defense within a framework that reassures Russia and China and that does not hinder other efforts to defend the U.S. against threats that are even more imminent."¹⁵⁰

Despite the terrorist attacks of 11 September 2001 and the ongoing war against terrorism, the Bush Administration continues to pursue a new strategic framework with Russia. On 13 November 2001, Presidents Bush and Putin issued a joint statement regarding this new relationship.

We have agreed that the current levels of our nuclear forces do not reflect the strategic realities of today. Therefore, we have confirmed our respective commitments to implement substantial reductions in strategic offensive weapons. On strategic defenses and the ABM Treaty, we have agreed, in light of the changing global security environment, to continue consultations within the broad framework of the new strategic relationship. On nonproliferation matters, we reaffirm our mutual commitment to the Biological and Chemical Weapons Conventions, and endorse efforts to strengthen the Nuclear Nonproliferation Treaty.¹⁵¹

The next day, Bush announced unilateral arms reductions, cutting the number of US nuclear warheads from 7,200 to between 1,700 and 2,200 over ten years.¹⁵² The Nuclear

¹⁴⁹ Baker Spring, "Talking Points: Terrorist Attack on America Confirms the Growing Need for Missile Defense," *The Heritage Foundation Background*, No. 1477, 20 September 2001, n.p., on-line, Internet, 19 February 2002, available from www.heritage.org/library/background/bg1477.html.

¹⁵⁰ Philip H. Gordon and Michael O'Hanlon, "September 11 Verdict: Yes to Missile Defense, But Don't Alienate Russia or China," *Los Angeles Times*, 17 October 2001, n.p., on-line, Internet, 19 February 2002, available from <http://www.brook.edu/dybdocroot/views/op-ed/Gordon/20011017.htm>.

¹⁵¹ George W. Bush, and Vladimir Putin, "Joint Statement on New U.S.-Russian Relationship," 13 November 2001, n.p. on-line, Internet, 19 February 2002, available from <http://www.whitehouse.gov/news/releases/2001/11/20011114.html>.

¹⁵² White House, "Fact Sheet: New Strategic Framework with Russia," 14 November 2001, n.p. on-line, Internet, 19 February 2002, available from <http://www.whitehouse.gov/news/releases/2001/11/20011114-2.html>.

Posture Review that was made public 9 January 2002 announced, that to comply with the President's direction, the US would retire the Peacekeeper ICBM, remove four Trident submarines from nuclear service, retain no capability to return the B-1 bomber to a nuclear role, and download warheads from operationally deployed ICBMs and SLBMs.¹⁵³ Reductions would be accomplished over several years, reaching approximately 3,800 by fiscal year 2007, with the remaining reductions complete by fiscal year 2012.¹⁵⁴ The Nuclear Posture Review also introduced the concept of a New Triad to "reduce our dependence on nuclear weapons and improve our ability to deter attack in the face of proliferating WMD capabilities."¹⁵⁵ The new triad will consist of offensive strike systems (both nuclear and non-nuclear), defenses (both active and passive), and a revitalized defense infrastructure, "bound together by enhanced command and control (C2) and intelligence systems."¹⁵⁶ The traditional Cold War triad may become just one piece of the new triad designed to meet a broader range of threats than the Cold war triad alone.

After consulting with governments around the world, the US announced 13 Dec 2001 that it was "providing formal notification of its withdrawal from the ABM Treaty."¹⁵⁷ President Putin's reaction was that the withdrawal "presented no threat to Russia's security," but was a "mistake," he then went on to offer nuclear weapon cuts comparable to those already announced by Bush.¹⁵⁸ The response from other countries was similar. Many expressed concerns over the perceived US lack of respect for arms control agreements and tendency to act unilaterally.¹⁵⁹ On 24 May 2002, the US and Russia signed a treaty to cut each state's nuclear warhead arsenal from over 6,000 to less

¹⁵³ "Findings of the Nuclear Posture Review," 9 January 2002, n.p., on-line, Internet, 22 February 2002, available from <http://www.defenselink.mil/news/Jan2002/020109-D-6570C-001.pdf>.

¹⁵⁴ Ibid.

¹⁵⁵ "Nuclear Posture Review Report," unclassified cover letter, no date, on-line, Internet, 22 February 2002, available from <http://www.defenselink.mil/news/Jan2002/d20020109npr.pdf>.

¹⁵⁶ Ibid.

¹⁵⁷ "ABM Treaty Fact Sheet," 13 December 2002, on-line, Internet, 20 February 2002, available from <http://www.whitehouse.gov/news/releases/2001/12/print/2001121302.html>.

¹⁵⁸ Guy Chazan, "Putin Proposes Steep Cuts In Russia's Nuclear Arsenal --- Offer Aims to Affirm Ties Amid Plans by the U.S. To Ditch ABM Treaty," *Wall Street Journal*, 14 December 2001, ProQuest, 22 February 2002.

¹⁵⁹ Klaus Arnhold, "Making Missile Defence Benign," *Survival*, 43, No. 3 (Autumn 2001): 83-85.

than 2,200.¹⁶⁰ Additionally, Bush and Putin announced their intention to form a joint committee to develop NMD.¹⁶¹

The domestic response to the terrorist attacks centers around defining the greater of the two threats—ballistic missiles or low technology methods of attack. Generally Americans have become more aware of their own vulnerability to a variety of threats. A recent Gallup Poll found that support for missile defense is growing. The 4 through 6 February 2002 poll shows 51 percent “saying the federal government should spend the money necessary to develop a system to defend the United States from nuclear missiles,” up from 41 percent holding the same view 19 through 22 July 2001.¹⁶²

The technology involved with missile defense has not changed since 11 September 2001. The organizational changes begun prior to the attacks continue to take shape as the Missile Defense Agency realigns the program from a theater and national focus to an integrated program focus. As the possibility of deployment rises, the focus of the missile defense debate is likely to shift from the need for missile defense to the technologies available to meet the need. Those favoring missile defense stress the importance of information learned from both failed and successful tests. Those opposed call attention to test failures and claim the tests are not conducted against realistic scenarios. “By early 2000, only about a third of all US hit-to-kill interceptor tests had succeeded, although the success rate had increased dramatically in the previous year. The most important question is not whether hit-to-kill interceptors will work on the test range—they probably will—but rather whether they will do so if an opponent deploys countermeasures.”¹⁶³

¹⁶⁰ Ron Popeski, “Putin, Bush Sign Landmark Nuclear Arms Treaty,” 24 May 2002, on-line, internet, 26 May 2002, available from http://reuters.com/news_article.jhtml?type=politicsnews&StoryID=1007238.

¹⁶¹ Ibid.

¹⁶² Mark Gillespie, “Nearly Half of Americans Content With Level of Defense Spending,” 27 February 2002, n.p., on-line, Internet, 27 February 2002, available from <http://www.gallup.com/poll/releases/pr020227.asp>.

¹⁶³ Dean A. Wikenning, “Ballistic Missile Defence and Strategic Stability,” *Adelphi Paper* 334, (New York: Oxford University Press, 2000), 25.

Chapter 4

Is it Time for Missile Defense?

Before determining whether a missile defense system should be fielded, it is necessary to determine what type of system is under consideration. Many of the missile defense debates spring from this lack of definition. Those supporting missile defense often speak of a limited system designed to defeat a limited threat. Those opposed to missile defense often cite concerns about the cost of building an impenetrable shield against a massive attack. Roger Handberg, Professor of Political Science and Interim Department Chair at the University of Central Florida, defines three categories of people in regards to missile defense.¹⁶⁴ Believers “desire NMD deployment as soon as possible without equivocation in the largest configuration feasible,” Wilsonians “reject NMD technology due to its capacity, in their judgment, to increase the possibility of war,” and finally, pragmatists “repeatedly reweigh their choices in light of changing international circumstances and technology issues.” Believers and Wilsonians are so far apart that they are unable to reach a compromise position. Their arguments are often value based, “where one sees enhanced, security, the other perceives heightened danger.” Both believers and Wilsonians believe that successful NMD would free the US from fear of retaliation, but they view the result of that freedom differently—Wilsonians see an aggressive US while believers see an empowered US. Finally, Handberg argues that the pragmatists balance the two sides and ultimately determine the level of support for missile defense at any particular moment in time.

Although Congress and the Bush Administrations have pushed to field a missile defense system, policy makers and security analysts still debate whether the US needs such a system and, if so, what kind is appropriate. Using Handberg’s terminology, most of them are pragmatists that have not landed firmly in the believer or Wilsonian camp. Each of the four elements discussed so far (threat, technological feasibility, international environment, and domestic environment) represents a dimension of this debate. All of

¹⁶⁴ Roger Handberg, *Ballistic Missile Defense and the Future of American Security: Agendas, Perceptions, Technology, and Policy*, (Westport, Connecticut: Praeger, 2002), 157.

them are interrelated, making it difficult to analyze any one in isolation. Moreover, the range of potential threats various missile defense advocates want to counter is large and varied. Threats from state actors include Russia, with its large nuclear arsenal; China, with a small but growing arsenal; states with shorter-range ballistic missiles and possibly nuclear warheads; and states that may acquire ballistic missiles in the future. Some missile defense advocates are also concerned about threats from non-state actors such as terrorists and missile system operators who might launch their weapons accidentally or without authorization.

This chapter will consider each of these elements in terms of the actors that represent some level of threat to the US in an attempt to find those areas where missile defense can be ruled out as unnecessary and those where missile defense should be considered or pursued. I will first outline the various types of threat the US faces, then look at the technical feasibility of various proposed systems in terms of both capability and cost, and finally discuss whether it is appropriate to field that system given the existing domestic and international environments.

Threat

To differentiate between the potential ballistic missile threats facing the US, Table 1 identifies several possible actors ranging from a near peer competitor to an unknown actor with only a single missile. This taxonomy is based on the relative size of the threat from each actor and on that actor's ability to hit the US by 2015 with a ballistic missile as determined by the National Intelligence Council's (NIC) December 2001 "Foreign Missile Developments and the Ballistic Missile Threat Through 2015."¹⁶⁵ Each actor's potential strategy for using these missiles against the US is also considered.

¹⁶⁵ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat Through 2015", December 2001, n.p., on-line, Internet, 11 January 2002, available from http://www.cia.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm.

Table 1
Actors and Threats

	Russia	China	Emerging ICBM Capable States^a	Emerging Ballistic Missile Capable States^b	Terrorist	Accidental or Unauthorized Launch
Size	Very Large	Medium	Small	Small	Unknown	Small
Long Range	High	High	Small	None	Unknown	Unknown
Short Range	High	High	High	Low-High	Unknown	Unknown
Potential Strategies Against the US	Strategic Deterrence	Strategic Deterrence and Theater Access Denial	Theater Access Denial	Theater Access Denial	Unknown	Unknown
Political Tension	Low	Medium	High	Low-High	High	Unknown

^a North Korea and Iran, and possibly Iraq¹⁶⁶

^b The Carnegie Non-Proliferation Project counts 30 nations as fielding some type of ballistic missile in addition to the 5 ICBM capable states previously noted.¹⁶⁷

When considered from the perspective of size, Russia clearly presents the largest threat by far to the US. The Russian arsenal of 4,000 warheads greatly outstrips the approximately 100 held by China.¹⁶⁸ The emerging ICBM-capable states are projected to possess only a few missiles with intercontinental range by 2015. Although the other emerging states are not expected to have intercontinental range weapons, they may be able to threaten US forces, friends, or allies within range of their existing systems. Terrorists are not expected to use ballistic missiles. Finally, the potential for an accidental or unauthorized launch is a small but real possibility.

The second threat category on Table 1 reflects what range of missile each actor has demonstrated the ability to launch. According to the NIC Report, only Russia and China have demonstrated an operational ICBM capability. Of the three potential ICBM-capable states, only Korea has come close to demonstrating intercontinental range with the 1998 launch of a Taepo Dong-1 missile, resulting in an overall assessment of a small long-range threat from these countries. The other emerging states are not expected

¹⁶⁶ Ibid.

¹⁶⁷ Carnegie Non-proliferation Project, "World Missile Chart," 25 February 2002, n.p., on-line, Internet, 30 May 2002, available from <http://www.ceip.org/files/projects/npp/resources/ballisticmissilechart.htm>.

¹⁶⁸ NIC, Dec 2001.

achieve intercontinental range in the near-term, resulting in a threat assessment of none. The range possibilities for the final two actors in Table 1 are unknown. Russia maintains the most advanced TBM force in the world and China has a robust TBM force and is increasing its TBM force against Taiwan, giving these two countries high assessments in short-range systems also. Some emerging ICBM-capable states also possess enough short-range systems to warrant a high rating, but the large number of states in this category requires a mixed assessment of “low to high”, reflecting differences between specific states and the amount of foreign support they receive. According to the NIC, “States with emerging missile programs inevitably will run into problems that will delay and frustrate their desired development timelines...Most emerging missile states are highly dependent on foreign assistance at this stage of their development efforts, and disturbance of the technology and information flow to their programs will have discernible short-term effects. The ready availability of assistance from multiple sources, however, makes it likely that most emerging missile states will be able to resolve such problems and advance their missile programs, albeit with a slippage in development time.”

The threat of nuclear war between the US and Russia declined following the Cold War, but the proliferation of ballistic missiles and nuclear weapons continued. According to the most recent National Foreign Intelligence Board Report, “proliferation of ballistic missile-related technologies, materials, and expertise...has enabled emerging missile states to accelerate missile development, acquire new capabilities, and potentially develop even more capable and longer-range future systems.” Although proliferation means more states have access to nuclear weapons and ballistic missiles, it does not automatically imply those states intend to use them against the US. It does mean, however, that the US must remain vigilant in determining which states are likely to proliferate and what their intent is towards the US. As the number of players increases, the opportunity for mistakes also increases. Although many of the states under discussion have only small numbers of weapons or missiles, the destructive power of just one weapon means the US cannot afford to get it wrong. As a result, believers prefer to err on the side of caution, finding in proliferation ample justification for missile defense. Pragmatists prefer a more realistic assessment in order to weigh more accurately the cost of missile defense against other priorities. Wilsonians prefer attempts to reduce these

threats through arms control and nonproliferation efforts.

Despite efforts to reduce the number of nuclear and ballistic missile capable states, many of them continue to see a role for these weapons. US decision makers need to understand the reasons these states proliferate in order to accurately assess the threat to the US and then to determine the role, if any, for missile defense. There are many reasons states choose to acquire nuclear weapons. A 1995 RAND report identifies several possibilities, including internal security concerns, deterring US intervention by coercing allies or preventing total defeat in war, gaining prestige, and gaining hard currency from the sale of nuclear weapons technology.¹⁶⁹ States have similar reasons for acquiring ballistic missiles, including prestige, coercive diplomacy, and deterrence.¹⁷⁰

Since each state proliferates for reasons unique to its situation, it is difficult to break them into precise categories. Many of the reasons cited above have little to do with the US, specifically. US leaders must recognize this fact and realize that they may have little influence on a state's proliferation decision when that decision includes such things as internal security, prestige, or the need for hard currency. Even though the US may not be able to influence a state's decision to proliferate, American leaders must be aware of how states that do opt to proliferate could use those weapons against the US. Two potential strategies exist: strategic deterrence and theater access denial.

Strategic deterrence refers to the ability a state has to dissuade another from using its nuclear arsenal, usually by threat of counter-strike. Strategic deterrence is typified in the long-standing relationship between the US and Russia and, to a lesser extent, the relationship with China. The US's ability to massively respond to a first strike by emerging ICBM-capable states makes this relationship one not of MAD, but one more closely resembling assured destruction.¹⁷¹ It is unlikely these states are interested in trying to deter a US first strike. Without missile defense, a state with a few ICBMs is capable of hurting the US, but not destroying it. The important question, therefore, is

¹⁶⁹ Dean Wilkening and Kenneth Watman, *Nuclear Deterrence in a Regional Context*, (Santa Monica, Calif.: RAND, 1995), 31-35.

¹⁷⁰ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," September 1999, n.p., on-line, Internet, 27 February 2002, available from <http://www.cia.gov/cia/publications/nie/nie99msl.html>.

¹⁷¹ Forrest E. Morgan, "Ballistic Missile Defense: Flying in the Face of Offensive Technological Dominance" paper presented at the 43rd International Studies Association Annual Convention, New Orleans, LA, 27 Mar 2002, 5.

whether the US can deter these states from a strike against the US. How other states view US credibility is critical. The credibility of the US to respond to a nuclear or other weapon of mass destruction strike is not likely to be questioned. However, well-known US concerns regarding collateral damage may actually contribute to an underestimation of US credibility in response to a conventional ICBM strike or even to a missile armed with a chemical or biological warhead. It is possible, though unlikely, that a state may decide the US threat of nuclear retaliation is not credible and that the US will essentially self-deter even after a single ICBM strike. The terrorist attacks on 11 September 2001 and lack of US nuclear response may have erroneously reinforced this view.

The second possible strategy for using ballistic missiles against the US is to deny access to a given theater of operations. Ballistic missiles with less than intercontinental range threaten deployed US troops and allies within range of those systems instead of civilians or military forces located in the US. These missiles, unlike ICBMs, have been used in conflict with both conventional and chemical warheads. There are several ways these weapons could be used to deny theater access. Threatening to strike potential allies in a particular region if they allow basing or overflight could deter those states from granting the US access, making it more difficult for American forces to operate in the region. If US allies cannot be deterred from allowing access, ballistic missiles could be used to attack ports and staging areas, again making it more difficult for the US to bring forces into the theater. Chemical, biological, or nuclear weapons might be particularly effective at slowing the flow of forces and material into a theater. Finally, if US forces are already in the theater of operations, ballistic missiles could be used not just to deter allies or to prevent access, but to actually hit American forces and allies. The goal would likely be to cause a large number of casualties in an effort to get the US to pull out of the region.

Robert Walpole, National Intelligence Officer for Strategic and Nuclear Programs at the Center for Strategic and International Studies, agrees that ballistic missiles can be used as either political or military weapons. He testified that “acquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States...Some of these systems may be intended for their political impact as potential

terror weapons, while others may be built to perform more specific military missions, facing the United States with a broad spectrum of motivations, development timelines, and resulting hostile capabilities. In many ways, such weapons are not envisioned at the outset as operational weapons of war, but primarily as strategic weapons of deterrence and coercive diplomacy.”¹⁷²

Political tension is the final category of threat to consider. Since the end of the Cold War, the tension between the US and Russia has continued to lessen and is today assessed as low. Their evolving relationship—what the Bush Administration refers to as a new strategic framework—recognizes that neither country plans to destroy the other. Although the capability for mutual destruction still exists, the imperatives driving it do not. The US-Russia relationship continues to be based on strategic deterrence. Although the leaders of the two states talk of moving away from MAD, since neither assumes the other will immediately destroy it if the chance arises, MAD still defines the relationship, just not with a hair trigger.

Although the strategic relationship between the US and China is also stable, the political tension between the US and China is assessed as medium because of the uncertainties regarding Taiwan, specifically the potential use of short- and medium-range missiles for theater access denial in the event of conflict.

The political tension between the US and the emerging ICBM-capable states is high, as evidenced by President Bush’s comments referring to these states as an “axis of evil.”¹⁷³ The assessment for the emerging ballistic missile capable states again varies from low to high depending on the specific state under consideration. Political tension with terrorists is high by definition and unknown for the final actor.

Table 2 provides an overall assessment of the threat each of the Table 1 actors presents, taking into account the size and range of its missile forces, the strategies that actor would likely employ, and the political tension between that actor and the US.

¹⁷² Senate, *Ballistic Missiles: Threat and Response: Hearings before the Committee on Foreign Relations*, 106th Cong., 2nd sess., 1999, n.p., on-line, Internet, 16 March 2002, available from http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=106_senate_hearings&docid=f:56777.wais.

¹⁷³ President George W. Bush, “State of the Union Address,” 29 January 2002, n.p., on-line, Internet, 30 May 2002, available from <http://whitehouse.gov/newsreleases/2002/01/20020129-11.html>.

Table 2
Overall Threat

	Russia	China	Emerging ICBM Capable States	Emerging Ballistic Missile Capable States	Terrorist	Accidental / Unauthorized Launch
Overall Threat	Low	Medium	Medium	Low	Low	Low

Despite the range and size of Moscow's missile force, improving relations with Washington suggest that the threat of a Russian missile attack against the US or its deployed forces is low. China's long-range missiles continue in their role of strategic deterrence, and yet the tension regarding Taiwan results in a medium threat assessment.

As with China, the most likely threat from the next two actors on Table 2, emerging ballistic missile capable states (including those that may soon have ICBMs), stems from a theater access denial scenario. Because of the higher tension between the states with ICBMs, that threat is assessed as medium while that of the non-ICBM emerging states is low to medium. The threat from the final two actors on Table 2 is assessed as low. Although the horror of terrorist attacks was brought home to the US in September 2001, the likelihood of their using ballistic missiles against the US is actually low. According to the National Foreign Intelligence Board Report, nonstate actors such as terrorists are more likely to use nonmissile delivery systems to attack US territory, since they are cheaper, easier, more reliable, more accurate, and do not automatically identify their point of origin.¹⁷⁴

Technological Feasibility

The threats discussed above range from the very large to the very small and from those designed to deter large missile strikes to those designed to deny US access. The varied nature of these threats means that no single type of missile defense, short of a

¹⁷⁴ Senate, *Ballistic Missiles: Threat and Response: Hearings before the Committee on Foreign Relations*.

global shield capable of destroying all missiles of every type, is going to be effective at countering all of them. This study examines three types of missile defense. Robust missile defense would consist of a nearly perfect shield capable of destroying close to 100 percent of missiles launched from any size threat. Limited missile defense would be capable of destroying a limited number of intercontinental range missiles. Theater missile defense would probably be unable to destroy intercontinental range missiles, but would be very capable of destroying large numbers of shorter-range missiles. Table 3 identifies the types of missile defenses required to counter the probable strategies addressed in Tables 1 and 2 and the technological feasibility and cost of those defenses. Gray shading represents the situations where missile defense is either not feasible (Russia) or not cost effective (terrorist, accidental, or unauthorized).

Table 3
Types of Missile Defense Required

	Russia	China	Emerging ICBM Capable States	Emerging Ballistic Missile Capable States	Terrorist	Accidental or Unauthorized Launch
Overall Threat	Low	Medium	Medium	Medium	Low	Low
Type of Missile Defense Required	Robust	Limited- Robust and Theater	Limited and Theater	Limited and Theater	Limited and Theater	Limited and Theater
Technologically Feasible?	No	Maybe	Yes	Yes	No	No
Cost	Extremely High	High	Medium – Low	Medium – Low	Medium – Low	Medium – Low

The ABM Treaty successfully codified two distinct classes of national missile defense systems and specifically banned a robust missile defense capability against strategic nuclear missiles.¹⁷⁵ A 1974 protocol to the Treaty reduced the number of authorized sites from two to one, further limiting the level of defense each nation could

¹⁷⁵ “Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Limitation Of Anti-Ballistic Missile Systems,” 26 May 1972, n.p., on-line, Internet, 22 April 2002, available from <http://www.state.gov/www/global/arms/treaties/abm/abm2.html>.

produce.¹⁷⁶ The protocol specified that the site could protect either the national capitol or a single ICBM field. The Treaty's restrictions only applied to missile defense against strategic nuclear missiles; other types of missile defenses were permissible.¹⁷⁷ During the 1991 Gulf War, the use of the Army's Patriot missile to attempt to destroy Iraqi Scud missiles demonstrated the potential of the theater missile defense (TMD) concept. By 1997, the US and Russia agreed that the ABM Treaty was not applicable to TMD systems as long as they did not pose a threat to the other side's strategic nuclear forces.¹⁷⁸

The size of the threat is an important factor leaders must consider when determining which type of system is required to meet that threat. The type of system required to meet the Russian threat is very different from the system needed to defend against numerically smaller threats such as those represented by terrorists or accidental launches. The possibility of different threats from various locations also affects the type of system needed. The Reagan Administration's early Strategic Defense Initiative concept envisioned a protective shield that would protect the US from a massive attack. Despite twenty years of research and spending estimated at \$123.5 billion (FY 2000 constant dollars) the US has not developed or deployed a missile defense system capable of defeating a massive attack.¹⁷⁹ Barring a technological breakthrough, such a robust system remains infeasible for the foreseeable future, regardless of available funding.

In addition to considering the feasibility of fielding a system to counter the Russian threat, it is also important to consider the impact on the American-Russian relationship of fielding non-treaty-compliant, limited NMD or TMD systems. Wilsonians feared that any missile defense system outside the parameters of the ABM Treaty would jeopardize strategic stability and undermine all arms control agreements, but they were wrong on both counts. After abrogating the Treaty, the US and Russia met in March 2002 to discuss an "agreement on lowering the current levels of offensive nuclear

¹⁷⁶ "Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile System," 3 July 1974, n.p., on-line, Internet, 4 May 2002, available from <http://www.state.gov/www/global/arms/treaties/abm/abmprot1.html>.

¹⁷⁷ ABM Treaty.

¹⁷⁸ Standing Consultative Commission for the Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Limitation Of Anti-Ballistic Missile Systems, "Agreement On Confidence-Building Measures Related To Systems To Counter Ballistic Missiles Other Than Strategic Ballistic Missiles," 26 September 1997, n.p., on-line, Internet, 24 April 2002, available from http://www.state.gov/www/global/arms/factsheets/missdef/abm_cbm.html.

¹⁷⁹ Handberg, 181.

weapons, and...a political declaration on a new strategic framework.”¹⁸⁰ Initial indications are that the dire predictions of the Wilsonians regarding the relationship between the US and USSR have not come to fruition. The two states have continued arms reduction efforts despite US intentions to deploy missile defense, signing the Treaty of Moscow on 24 May 2002.¹⁸¹ On the other hand, it is unlikely arms reductions will result in nuclear arsenals so small that a missile defense system could defeat them. Therefore, despite Wilsonian fears, a system capable of countering the other threats should have little impact on the deterrence relationship that has existed for decades between the US and Russia, since such a system would have a negligible impact against a full Russian attack.

China, the second actor on Table 3, presents a more complicated situation. Currently, China is estimated to possess about 20 ICBMs capable of reaching targets in the US.¹⁸² Due to on-going modernization efforts begun in the mid-1980s, China is projected to increase that number to 75 to 100 warheads deployed against the US in the next 15 years.¹⁸³ The projected size of the Chinese threat places it in a unique category, significantly larger than most, but well short of Russia. Currently, the Chinese threat is at the upper limit of what might be classified as a small attack, and a fully developed layered missile defense system may be able to counter a large percentage of that threat. However, the projected growth of the Chinese arsenal would probably offset the impact of a small-threat-capable missile defense system. The timing is critical. If the US timetable for fielding missile defense gets ahead of the Chinese modernization, the US may actually put China’s strategic deterrent capability at risk, thereby raising tensions.

The remaining actors on Table 3 can be countered with a combination of limited NMD and TMD systems, and it appears technologically feasible to field these systems over the next ten years. How effective these systems are largely depends on the amount of money available to fund them. As the technology matures and system costs are refined, the debates will continue over whether missile defense systems are worth the

¹⁸⁰ “Bolton Calls U.S.-Russia Arms Talks ‘Very Productive,’” 22 March 2002, n.p., on-line, Internet, 23 April 2002, available from <http://www.usinfo.state.gov/topical/pol/arms/02032202.htm>.

¹⁸¹ Ron Popeski, “Putin, Bush Sign Landmark Nuclear Arms Treaty,” 24 May 2002, on-line, internet, 26 May 2002, available from http://reuters.com/news_article.jhtml?type=politicsnews&StoryID=1007238.

¹⁸² NIC, December 2001.

¹⁸³ Ibid.

cost. The incremental nature of the layered system currently envisioned provides many opportunities to make cost versus capability trade-off decisions.

Just as the Russian threat is currently too big to tackle, there are threats that are so unlikely they do not justify developing and fielding missile defense in any form. The final two potential actors on Table 3 fall into this category. As already discussed, the threat from terrorist use of ballistic missiles is very low. Although the limited threat from terrorists alone does not justify fielding a missile defense system, a system fielded to meet other threats could potentially mitigate that low-level threat, depending on the location and capability of the system.

The second threat not justifying missile defense is the limited threat of an accidental or unauthorized launch. While believers argue that the proliferation of ballistic missiles and nuclear weapons makes an accidental launch more likely and provides more increased opportunities for unauthorized launches, it is unlikely states will fail to control them because of their importance. Like the terrorist threat, this threat alone does not justify fielding a missile defense, but again, a system built for other reasons may provide an extra margin of insurance. Although missile defense cannot stop proliferation, it can provide US decision makers a margin of safety they would not otherwise have when other states attempt to prevent the US from pursuing its own interests. On the other hand, missile defense will likely never give a decision maker enough surety to rely on it alone, but it could provide a safety net in the event he underestimates the credibility of threats leveled against the US or its deployed military forces.

The US is pursuing a variety of programs to conduct both the theater and limited missile defense roles. Yet, as noted in Chapter 3, the current administration is moving away from this terminology. Programs and systems are now classified by the phase of missile flight they operate against: boost, mid-course or terminal.¹⁸⁴ The layered defense concept is intended to provide multiple opportunities to destroy enemy missiles. It also allows for incremental deployment as the various systems are developed and made operational. What may start as a system capable of meeting theater-level threats, may be expanded to cover medium-range threats. Abrogating the ABM Treaty released the US

¹⁸⁴ Missile Defense Agency, "Ballistic Missile Defense Approach Fact Sheet," March 2002, n.p., on-line, Internet, 4 May 2002, available <http://www.acq.osd.mil/bmdo/bmdolink/pdf/approach.pdf>.

from restrictions against using theater system sensors and radars to conduct defense against longer-range missiles.

Many of the systems previously thought of as TMD systems now fall into the terminal defense segment and are either fielded or in the process of being fielded by the military services.¹⁸⁵ The PATRIOT Advanced Capability-3 or PAC-3 is the latest generation of the PATRIOT missile used in the Gulf War. The program includes an improved missile, along with radar, communications, and software updates.¹⁸⁶ Initial operational test and evaluation should be completed in 2002.¹⁸⁷ PAC-3 “successes include multiple simultaneous engagements of both ballistic and air breathing aircraft and cruise missile targets.”¹⁸⁸ The PAC-3 missile will also be used by the Medium Extended Air Defense System (MEADS), a combined effort of the US, Germany, and Italy designed to provide protection for forward deployed troops and other assets against theater ballistic missile threats, and it reflects the US interest in protecting friends and allies from these threats. The planned system will be capable of providing 360-degree protection against short-range missiles and unmanned aerial vehicles. Production could begin as early as 2009.¹⁸⁹ The importance of MEADS, as well as of the joint US and Israeli Arrow program, lies in the fact that they are internationally developed programs. By working with other states to develop and deploy missile defense systems, the US can better address the fears and concerns of states regarding US intentions.

Theater High Altitude Area Defense (THAAD), also a part of the terminal defense segment, and with fielding expected in 2007 or 2008, represents “the nearest-term solution to the longer-range missile threat.”¹⁹⁰ It is designed to engage short- and medium-range missiles at higher altitudes than those systems already discussed, allowing

¹⁸⁵ Missile Defense Agency, “Terminal Phase Missile Defense Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/terminal.pdf>.

¹⁸⁶ Missile Defense Agency, “PATRIOT Advanced Capability-3 Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/pac3.pdf>.

¹⁸⁷ US Army Program Executive Office Air and Missile Defense, “PAC-3 Test Conducted, Targets Intercepted,” 21 March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/html/pacmar21.htm>.

¹⁸⁸ Missile Defense Agency, “Terminal Phase Missile Defense Fact Sheet.

¹⁸⁹ Missile Defense Agency, “Medium Extended Air Defense System Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/meads.pdf>.

¹⁹⁰ Missile Defense Agency, “Theater High Altitude Area Defense Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/thaad.pdf>, and Missile Defense Agency, “Terminal Phase Missile Defense Fact Sheet.

it to take more than one shot if necessary. Like the other systems, THAAD is transportable and destroys its target by hitting it. According to the Missile Defense Agency, Program Definition and Risk Reduction flight tests “successfully demonstrated missile launch, booster performance, booster/kill vehicle (KV) separation, KV shroud separation, radar-to-missile communication, and flight/seeker environmental data collection,” in addition to two successful intercepts.¹⁹¹

The Ground-Based Midcourse System (formerly NMD) and the Sea-based Midcourse System (formerly Navy Theater Wide) constitute the midcourse defense segment.¹⁹² This system is currently undergoing test and evaluation including flight tests, ground tests, and extensive use of modeling and simulation.¹⁹³ A prototype interceptor successfully engaged a target vehicle on 15 March 2002. According to a Defense Department news release, “in addition to the EKV [exoatmospheric kill vehicle] locating, tracking, and intercepting the target resulting in its destruction using only the body-to-body impact, this test also demonstrated the ability of system elements to work together as an integrated system.”¹⁹⁴ The sea-based portion of MDS builds on the Navy’s AEGIS Lightweight Exo-Atmospheric Projectile Intercept Flight Demonstration Program, and it is expected to provide contingency sea-based midcourse defense as early as 2004.¹⁹⁵ Recent test success with the ground-based midcourse system cleared the way for an operational test site with limited emergency capability.¹⁹⁶ This site will be operational in Alaska by October 2004.

The final and possibly most ambitious segment of the system is the boost-phase layer. The Missile Defense Agency is pursuing parallel efforts for sea-based and space-based kinetic energy weapons, as well as air- and space-based lasers to destroy enemy

¹⁹¹ Missile Defense Agency, “THAAD Testing Program,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/thaadtes.pdf>.

¹⁹² Missile Defense Agency, “Ballistic Missile Defense Approach Fact Sheet”.

¹⁹³ Missile Defense Agency, “Ground Based Midcourse Testing Program,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/gbtest.pdf>.

¹⁹⁴ Department of Defense, “Missile Intercept Test Successful,” 15 March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.usinfo.state.gov/topical/pol/02031601.htm>.

¹⁹⁵ Missile Defense Agency, “Sea-Based Midcourse Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/seabased.pdf>.

¹⁹⁶ James Dao, “Pentagon Optimistic About Missile Shield,” *New York Times*, 15 April 2002, <http://www.nytimes.com/2002/04/15/national/15MISS.html>, 22 April 2002.

missiles during their initial powered phase of flight.¹⁹⁷ The first lethal demonstration by the airborne laser is expected by 2004 and a kinetic energy intercept is expected by 2005.

The final area of technological feasibility that must be considered is cost. Unlike the missile defense plans under President Clinton, which carefully compared and considered three distinct architectures, the Bush plan, according to Missile Defense Agency (MDA) Director Ronald Kadish, “does not define a specific architecture. It does not commit to a procurement program for full, layered, defense. There is no commitment to specific dates for production and deployment other than for lower-tier terminal [TMD] defense systems...Specific system choices and time lines will take shape over the next few years through our capability-based, block approach...We will establish yearly decision points to determine the status of the available technologies and concept evaluations in order to be in a position to accelerate, modify, truncate, or terminate efforts in a particular area.”¹⁹⁸ Similarly, a recent Congressional Budget Office (CBO) report estimating costs for NMD systems cautioned that “for most of the missile defense systems that the CBO was asked to consider, no detailed deployment plans or schedules exist. CBO was required to make some assumptions about all three aspects—components, technical capabilities, and schedules—of the systems in order to estimate costs.”¹⁹⁹

Despite the difficulty of determining and comparing costs directly, it is possible to consider current research and development budgets within the MDA along with the specific architecture estimates from the CBO. Table 4 reflects the current MDA budget.

¹⁹⁷ Missile Defense Agency, “Boost Phase Missile Defense Fact Sheet,” March 2002, n.p., on-line, Internet, 4 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/bstphase.pdf>.

¹⁹⁸ Congressional Research Service, *Missile Defense: The Current Debate*, CRS Report for Congress ([Washington, D.C.]: Congressional Research Service, Updated 14 September 2001), 22.

¹⁹⁹ Congressional Budget Office, *Estimated Costs and Technical Characteristics of Selected National Missile Defense Systems*, ([Washington, D.C.]: Congressional Budget Office, January 2002), n.p., on-line, Internet, 22 May 2002, available from <http://www.cbo.gov/showdoc.cfm?index=3281&sequence=0>.

Table 4
FY03 Budget Allocation by Work Breakdown Structure (TY \$Million)

Work Breakdown Structure	FY02	FY03	FY04	FY05	FY06	FY07
1.0 BMDS	846	1,101	1,252	1,200	1,182	1,219
2.0 Terminal Defense Segment	2,026	1,128	927	1,078	1,149	1,499
3.0 Midcourse Defense Segment	3,762	3,193	3,074	3,016	2,969	2,596
4.0 Boost Defense Segment	600	797	1,390	1,400	1,591	2,275
5.0 Sensor Segment	335	373	489	1,146	900	1,008
6.0 Technology	139	122	155	130	143	147
MDA Total	7,709	6,714	7,287	7,970	7,934	8,743

Source: Ronald T. Kadish, "The Missile Defense Program Lieutenant General Ronald T. Kadish, USAF Director, Missile Defense Agency Fiscal Year 2003 Budget," 28 pages, on-line, Internet, 23 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/pdf/budget03.pdf>

The CBO report looked specifically at the cost of various ground-based NMD systems (now the ground-based midcourse system) for the years 2002-2015 (constant 2001 dollars).²⁰⁰ Their estimates ranged from a low of less than \$23 billion for a single-site system housing 100 interceptors to a high of \$64 billion for a three-site system. A single site is expected to defend against several tens of missiles using only simple countermeasures. The location of the site determines how much of the United States can be protected. These numbers include \$2 billion for the test bed facilities in Alaska. The Alaska site, due to its location, will not provide complete protection, but should be capable of defending against a small (low single digit number of missiles within its range which includes launches from North Korea.

The Table 3 cost estimates are relative rather than specific. As discussed, a robust NMD system is beyond current technological capabilities and will require an enormous investment to develop and field. The integrated missile defense plan of the Bush Administration will likely be medium to high cost as compared to theater-only systems, which are relatively low cost. Even the relative cost of the integrated system is difficult to determine because no architecture has been determined. The sheer complexity of multiple systems and layers will, however, make the system relatively expensive compared to theater only systems. Decision makers must periodically weigh program development and cost against the threat to determine whether they should continue to

²⁰⁰ CBO.

fund missile defense. Assuming the program continues, the limited emergency capability available from test sites like the one in Alaska provide an additional benefit for money that is being spent anyway. According to Defense Secretary Donald Rumsfeld, current “missile defense funding represents only 2.1 percent of the overall defense budget.”²⁰¹ Decision makers must constantly compare the costs of missile defense against other pressing requirements.

International Environment

The international environment is another complex variable in the missile defense decision. For purposes of this study, terrorists and those responsible for accidental or unauthorized launches are not considered members of the international system and will not be addressed. Decision makers must consider the reactions of friends and allies as well as those of potential adversaries. Table 5 includes some of the most important state actors and their likely response to US missile defense decisions.

Table 5
International Response to US Missile Defense Options

	Close Allies	Germany	France	Russia	China	Taiwan	Japan
Robust NMD	Oppose	Oppose	Oppose	Oppose	Oppose	Support	Concern
Limited NMD	Support/ Concern	Concern	Oppose	Neutral	Oppose	Support	Concern
TMD	Deploy	Deploy	Opposed	Neutral	Oppose	Deploy	Deploy

It is important for American leaders to remember that the strategic environment has changed from one of a global superpower rivalry to one more regionally focused.²⁰² As the sole superpower, the US often brings a global perspective to events and issues that other states and actors are considering from a primarily regional perspective. This difference can lead to misunderstandings and disagreements between the various states.

²⁰¹ Nathan Hodge, “Rumsfeld to Senate: Restore missile-Defense Funding Cut,” *Defense Week Daily Update*, 21 May 2002, n.p., on-line, Current News Early Bird, 22 May 2002, available from <http://ebird.dtic.mil/May2002/e20020522restore.htm>.

²⁰² David C. Gompert and Klaus Arnhold, “Ballistic Missile Defense: A German-American Analysis,” RAND Issue Paper (RAND, 2001), 5.

The concept of TMD provides just one example. Possible international responses to US proposals to deploy TMD vary from fears that it will spark an arms race as states attempt to acquire enough offensive weaponry to overcome the TMD system to recognizing TMD as a legitimate method for a state to preserve its ability to intervene in pursuit of its own interests.²⁰³

Before the US abrogated the ABM Treaty, many allies were concerned about US plans to field missile defenses primarily because of the uncertainty of the Russian reaction. Other concerns, especially in Europe, included a perceived US trend towards unilateralism that they feared missile defense would increase.²⁰⁴ Careful handling by both the Clinton and Bush administrations eased these concerns. Ivo Daalder identified several events that combined late in 2001 to change the tone in Europe from one of opposition to one of growing acceptance.²⁰⁵ These events centered on broad issue discussions, begun in early 2000 during the Clinton Administration and intensified by the Bush Administration, that successfully allayed European concerns that US decision makers were not considering their views. The Bush Administration continued the progress by not making an immediate decision regarding missile defense and by stressing “that any defence system would aim to protect not only the United States, but also US allies overseas from missile attack.” The talks also reduced concern over the Russian response, while allowing Europeans to see that the Bush Administration was ultimately committed to deployment.

Currently, specific positions on US missile defense activities are still fluctuating following the ABM Treaty abrogation. Close allies of the US—Canada, Britain, and Australia—are generally supportive of US efforts. Although few details of actual plans are available, several states’ cooperation will be required for the US to field its planned system. Cooperative efforts include upgrading radars in the United Kingdom and interaction with Canada through the North American Aerospace Defense Command

²⁰³ Gompert 19.

²⁰⁴ Klaus Arnhold, “Making Missile Defence Benign,” *Survival*, 43, No. 3 (Autumn 2001): 83-85.

²⁰⁵ Ivo H. Daalder and Christopher Makins, “A Consensus on Missile Defence?” *Survival*, 43, No. 3, (Autumn 2001): 61-66.

(NORAD).²⁰⁶ Despite explicit government support, these allies' electorates are less sure of the path their governments should follow.²⁰⁷ Germany supports TMD activities, as indicated by their work with the US on MEADS.²⁰⁸ Germany does not, however, support any type of NMD system, favoring instead the creation of a "global missile control regime," as a means to reduce the impact of missile proliferation.²⁰⁹ The French response to NMD is slightly stronger, to the point of opposition. According to Colin Gray, "with the exception of France, America's European allies would like to be enthusiastic about the latest U.S. BMD scheme(s). For deep historical reasons associated with the loss of great power status, the French have evolved a political culture which thrives on the promotion of anti-American sentiment."²¹⁰

The European example serves to illustrate the importance of careful dialogue with all involved states to reduce misperceptions and answer questions regarding intended systems. This ongoing dialogue allows the US to weigh more accurately the level of missile defense support from friends and allies and to make informed decisions based on that understanding.

The response in Asia is divided. Japan and Australia have both participated in research and development related to missile defense, yet stop at actually endorsing deployment.²¹¹ Both are primarily concerned with China's reaction to deployment. Taiwan has expressed interest in purchasing TMD-capable equipment from the US, but Chinese objections raise concerns regarding the fallout of such measures.

²⁰⁶ Rebecca Johnson, "Downing Street says yes: Britons, no," *Bulletin of the Atomic Scientists* 57 no. 6 (November/December 2001): 28-30, *ProQuest*, on-line, 4 May 2002, and David Pugliese, "U.S. pushes ahead with 'missile shield' program: Pressure for Canada to join defence system grows as U.S. installs controls at Norad base," *The Ottawa Citizen* 2 March 2002, *LEXIS-NEXIS Academic Universe*, on-line, 4 May 2002.

²⁰⁷ Ibid.

²⁰⁸ Harald Mueller, "Missile defense: Germany hopes it will go away," *Bulletin of the Atomic Scientists* 57 no. 6 (November/December 2001): 31-33, *ProQuest*, on-line, 4 May 2002.

²⁰⁹ Ibid.

²¹⁰ Colin S. Gray, "European Perspectives on U.S. Ballistic Missile Defense," National Institute for Public Policy March 2002, 28, on-line, Internet, 6 May 2002, available from <http://www.nipp.org/Adobe/europe.pdf>, 9-10.

²¹¹ William T. Tow and William Choong, "Asian perceptions of BMD: Defence or disequilibrium?" *Contemporary Southeast Asia*, 23, no. 3 (December 2001): 379-400, *ProQuest*, on-line, 4 May 2002, and Kori Urayama, "Missile defense: Japan's wait-and-see approach," *Bulletin of the Atomic Scientists* 57 no. 6 (November/December 2001): 33-35, *ProQuest*, on-line, 4 May 2002.

In addition to understanding the concerns of allies, decision makers must also consider the response to missile defense from potential adversaries. Russian government statements since the Treaty abrogation announcement have repeatedly asserted that the US is unlikely to acquire a successful comprehensive national missile defense system and therefore MAD will continue for the short- and medium-terms.²¹² As long as the US does not allow missile defense to erode Russia's strategic security or its perceived international standing, Russia will not oppose TMD or limited NMD systems. Achieving this objective will require extensive dialogue and openness on the part of the US. As long as the relationship with Russia remains cordial, and Russia does not oppose US missile defense activities, the majority of US allies will either remain neutral or support US missile defense activity. The remaining threat states are opposed to any missile defense system.

China, because of the potential impact on its strategic security, opposes any level of NMD.²¹³ Since the current Chinese strategic nuclear posture is small, and their modernization activities will likely continue regardless of US decisions on missile defense, the US should not be overly concerned with China's desire to build a force large enough to meet their perceived security concerns. This would allow China to retain its international standing and prestige. As in its other relationships, American leaders must continue dialogue with the Chinese to understand their concerns and to be seen as taking them seriously. As Bates Gill noted recently, "Regardless of the impact of missile defense on China's deterrent, Beijing wished to avoid being characterized as a 'rogue state' or being seen as the justification for missile defenses."²¹⁴ The Chinese are actually more concerned with the potential that the US could provide TMD for Taiwan, since this action would be seen as a direct challenge to Chinese goals regarding reunification.²¹⁵ Deploying or selling TMD capable systems such as PAC-3 or Aegis-equipped naval vessels to Taiwan would raise concerns that the US would defend Taiwan, reversing any

²¹² Celeste A. Wallander, "Russia's Strategic Priorities," *Arms Control Today* 32, No. 1 (January/February 2002): 4-6.

²¹³ Gompert 17-18.

²¹⁴ Bates Gill, "Can China's Tolerance Last?" *Arms Control Today* 32, No. 1 (January/February 2002): 7-9.

²¹⁵ Gompert, 19.

diplomatic success China has made towards reunification.²¹⁶ By recognizing these concerns, and taking them into consideration when making decisions such as selling TMD systems to Taiwan, the US can minimize Chinese opposition to missile defense.

The emerging ballistic missile states, including those pursuing ICBMs, are also opposed to all types of missile defense since the weapons they are attempting to develop and deploy are precisely the weapons missile defense is designed to stop. It makes little difference if these states view the primary purpose of their missiles as warfighting or political. Either way, missile defense affects these states' ability to use their weapons as planned.

In sum, decision makers must weigh all the various concerns as they determine the role of missile defense for the US. How the international community responds to US missile defense efforts will ultimately depend on how the US explains the decisions it reaches and the actions it takes, and how well it is perceived to consider international concerns.

Domestic Environment

Determining how much BMD the American public is willing to buy may be the most difficult task of this analysis. Although Americans often say they support the concept of missile defense and have even been known to express outrage when told that no continental defense exists, their willingness to spend the money required to develop and field an operational system is uncertain.²¹⁷ Despite the efforts of the believers to bring missile defense issues into the public limelight, the issue remains largely one beyond the interest of the average citizen. As a result, much of the debate is carried on within political and special interest circles.

Once again, it is important to understand the difference between TMD and NMD. There has never been any serious challenge regarding the value of TMD, and the US has continued to improve its capability in this area since it first came to public attention with the use of the PATRIOT against Iraqi Scuds during the Gulf War.

²¹⁶ Ibid, 9.

²¹⁷ "America's Global Role: Major Proposals," 15 May 2002, n.p., on-line, Internet, 21 February 2002, available from http://www.publicagenda.org/issues/major_proposals_detail.cfm?issue_type=americas_global_role&list=14.

The ongoing debate over missile defense revolves around the NMD decision. Ultimately, the decision is one of cost versus capability. Truly effective NMD, whether robust or limited, requires a near leak-proof system. The cost of achieving that final level of capability is huge. The closer the system gets to perfect, the harder and more expensive the next improvement becomes. At some point a decision has to be made to accept a less-than-perfect system and assume that its probable effectiveness is high enough that potential adversaries will conclude they cannot defeat it. Ultimately, the decision is one of cost and must be made based on the assessment of the value of deploying a less-than-perfect system. Those supporting deployment concentrate on the possibility that even a less-than-optimum system can mitigate, if not defeat, a small number of missiles, or that the existence of even limited missile defenses enhances America's deterrent posture. Those opposing deployment believe that the US is not defenseless against ballistic missile launches. They believe diplomacy and arms control can at least delay the threat; if diplomacy does not work, US nuclear and conventional superiority will deter their use; and if deterrence is in doubt, preemptive strikes to remove the capability are always an option.²¹⁸

The predicable result of this debate is a compromise course between the two extreme positions. While continuing to use diplomatic methods, the Bush Administration is pushing hard to begin fielding a layered, limited missile defense. This approach accomplishes two goals. First, it allows the technology to mature and keeps the US on the leading edge of research. Second, the developmental systems provide an early, though very limited capability that can be used, if needed. As currently envisioned, the layered missile defense program pushed by the Bush Administration is an incremental approach to missile defense that provides many opportunities for modification based on changes in any of the factors discussed in this study. The cost savings provided by developing complementary sensors and weapons reflects the desire to reduce costs wherever possible. The technological and fiscal reality of combining TMD and NMD systems when possible was also a cost saving measure, but required the politically risky step of abrogating the ABM Treaty. Evolving international relationships, specifically

²¹⁸ Dean A. Wikenning, "Ballistic Missile Defence and Strategic Stability," *Adelphi Paper 334*, (New York: Oxford University Press, 2000), 12-13.

between the US and Russia, combined with careful and thoughtful diplomacy conducted by two separate administrations, permitted that action with what was, for many, an unexpectedly muted international reaction.

As of this writing, the pragmatists are leaning more towards the believers and missile defense is on track for a very limited capability by the end of President Bush's current term in office. The terrorist attacks on the World Trade Center and the Pentagon in September 2001 helped tip the balance toward fielding missile defense, at least in the short term. The Administration took advantage of the situation to elevate the Ballistic Missile Defense Office to Agency status, better reflecting the national priority of its mission.²¹⁹ The Administration plans to break ground this summer at Fort Greely, near Fairbanks, Alaska, on a missile test site capable of housing five interceptors.²²⁰ Although the site is intended for testing, it could be used to defend the United States against a limited attack from North Korea. The goal is to have the site operating by October 2004, before the next presidential elections in November.²²¹ Fielding the ground-based interceptor portion of missile defense will provide the US with the first limited protection from ballistic missile attack since the Sentinel system shut down in 1975. As Sentinel demonstrated, deployment alone is not always enough to guarantee a program will continue. As the funding required to continue developing and fielding integrated missile defense becomes better defined, many in Congress may begin to question whether the capability this program provides justifies its costs.²²²

The nature of the domestic environment, in which a largely disinterested population is led by policy makers with very contradictory views of missile defense, makes it impossible to characterize other than to recognize that it varies greatly depending on many factors.

²¹⁹ "DOD Establishes Missile Defense Agency," 4 January 2002, n.p. on-line, Internet, 22 April 2002, http://www.defenselink.mil/news/Jan2002/b01042002_bt008-02.html.

²²⁰ James Dao, "Pentagon Optimistic About Missile Shield," *New York Times*, 15 April 2002, <http://www.nytimes.com/2002/04/15/national/15MISS.html>, 22 April 2002.

²²¹ Ibid.

²²² Pat Towell, "Democrats Dubious About Missile Defense Management," *CQ Weekly* 60, no. 11 (16 May 2002): 715.

Conclusion

The most probable missile threats facing the US that missile defenses can potentially counter are from China and the emerging ballistic missile capable states, including those that may be able to field ICBMs. If China's strategic modernization proceeds as expected, it too will soon pose a threat large enough to make defending against it both too expensive and technologically infeasible. The potential threats alone, however, are not enough to justify missile defense. Because adversaries can use a variety of missiles against the US in a variety of ways, the US must consider the technological feasibility of defending against many kinds of ballistic missile threats. Currently, it is not technologically feasible to provide a robust missile shield to defend the US homeland. At the other end of the spectrum, great strides have been made in TMD systems designed to protect forward-deployed troops and allies against short- and medium-range missiles. At this point in time, the administration has decided that it is technologically feasible to provide limited protection against ICBMs. Protecting the homeland is an important issue to the American public, and they have not balked at the price so far. But, as the US begins to deploy systems and costs mount, the issue is guaranteed to be revisited.

American leaders must also consider other states' reactions to US efforts to develop missile defenses. Attempting to defend against the improbable launch of a few ICBMs from an emerging threat state like Iraq may not be worth antagonizing the long-standing deterrence relationship with Russia, or the evolving one with China. Similarly, the US must weigh the fears and concerns of its friends and allies and answer them honestly and openly. Fielding any level of missile defense while disregarding any of these factors could result in long-term consequences far more serious than the ballistic missile threat those defenses are designed to counter.

Finally, American leaders must serve their constituents on multiple levels. The desire to protect the American people from the risk of missile attack must be balanced against the cost. Is there a threat? Yes. Is limited NMD and TMD technologically feasible? Probably. Can the international community accept these systems? Probably. Does the domestic environment support it? To a point.

Do the answers to these questions indicate it is time for missile defense? The Bush Administration thinks so and is working to implement its vision of a layered system

to protect US troops abroad, American friends and allies and, to a limited extent, the US homeland. The next chapter will assess the many factors, past and present, that bear on the decision to develop and deploy missile defense.

Chapter 5

Conclusion

It is indeed time for the US to pursue a strategy that includes strategic defense. President Bush's decision to abrogate the ABM Treaty and to integrate TMD and NMD systems reflects a belief that MAD logic no longer determines the appropriateness of missile defense. The evolving relationship between the US and Russia, and the lack of a MAD relationship with any other state, places the US at a unique point in time to pursue strategic defense. This opportunity also presents challenges—the most important of which is the challenge of getting the rest of the international community to understand and accept the US perspective. The Bush Administration has taken the first steps on a long road to shifting America's nuclear strategy from one of deterrence to a mixed strategy that includes strategic defense. But, the decision to take those steps in no way guarantees whether any definite “show stoppers” emerge from any of the four broad considerations this study has examined—threat justification, technical and cost feasibility, international acceptance, and domestic acceptance—and second, on whether this administration and those that follow over the course of a long-term program can mobilize and sustain sufficient domestic will to implement the strategy.

Summary

The US defense community has been interested in missile defenses since the Second World War. But, despite continuous research and development and several attempts to field an operational system, political or technical obstacles have blocked those efforts. Solving those problems is a necessary first step for making strategic defense a reality, although it is unlikely to be sufficient. Table 6 shows how, over the history of America's effort to develop and deploy missile defenses, conditions have changed in each of the decision factors this study has examined. Gray shading indicates that conditions existed that presented obstacles to deploying missile defenses.

Table 6

Factor Comparison

Threat	Technological Feasibility		Domestic Environment	International Environment
No Threat 1945 - 1949	High		Opposed	Tolerant
Small Threat Russia: 1949 - 1963 China: 1964 - 1975	Medium Medium		Opposed Tolerant	Tolerant Tolerant
Large Threat Russia: 1957 - 1972 ABM Treaty: 1972 - 2002 SDI Speech: 1983 End of Cold War: 1989	Low Low Low Medium		Opposed Opposed Ambivalent Ambivalent	Tolerant Opposed Opposed Skeptical
Theater Threats Gulf War: 1989 – 1991	Low		Tolerant	Tolerant
Emerging Threat Rumsfeld Commission Report: 1998 Bush Pushes for Missile Defense: 1999 9-11 Attacks / ABM Treaty Abrogation: 2001	ICBM Medium Medium Medium	Theater High High High	Ambivalent Ambivalent Tolerant	Skeptical Skeptical Tolerant

Threat. The ballistic missile threat the US has faced has varied considerably over time, and therefore, the methods it has pursued to meet those threats have evolved. At the end of World War II, only the US possessed nuclear weapons and no one had ballistic missiles except for a handful of V-2s the US and the USSR captured from Germany.²²³ The US recognized the possibility that other states would develop these weapons and began to research methods to defeat both nuclear-armed aircraft and missiles. When the Soviets exploded a nuclear device in 1949 and then launched Sputnik in 1957, Americans became aware that the US homeland was vulnerable to a Soviet attack. Based on the American experience, US leaders believed the initial ballistic missile threat would be small and, therefore, assumed nuclear-armed interceptors such as Nike-Zeus would be capable of defeating it.

²²³ Michael J. Neufeld, *The Rocket and the Reich: Peenemünde and the Coming of the Ballistic Missile Era* (New York: The Free Press, 1995), 272.

As Nike-Zeus development continued, “missile gap” allegations pointed to a much larger Soviet threat than previously anticipated. As a result, Nike-Zeus deployment plans stopped in 1963 and development work began on the more capable Nike-X system to meet the larger threat. As the size of the Soviet arsenal continued to increase, doubts regarding the feasibility of countering it increased. Two events combined to keep development on-track—the emergence of the small Chinese threat in 1964, and the desire to use Nike-X as a bargaining chip with the Soviets in arms control talks. By the time the ABM Treaty was signed in 1972, Nike-X had transitioned first to Sentinel in 1967 to protect cities from a Chinese attack and to Safeguard in 1969 to protect a single ICBM field from Soviet attack and a portion of the population from a Chinese attack. The difficulty, if not impossibility, of defending against the large Soviet threat was accepted until 1983 when President Reagan reopened the debate.

Reagan’s SDI speech reinvigorated research and development into missile defense. Technological advancements raised the possibility of successfully defending against the large Soviet threat, but before those advancements could be fully explored, the Soviet Union collapsed in 1989 and the perceived threat dropped drastically, effectively ending the push for a robust missile defense.

The use of Scud missiles in the 1991 Gulf War, and the use of the Patriot missile to try to shoot them down, energized the pursuit of a theater missile defense (TMD). Although, decision makers viewed defending against a large ICBM attack as unnecessary and in violation of the ABM Treaty, defending against shorter-range missiles was not, and their development and deployment accelerated. As the number of states possessing missile technology and the ranges of those missiles increased, concern increased regarding the ability of one of these states to hit the US directly. The 1998 Rumsfeld report typified this view. The desire for at least limited missile defenses to deal with this small but growing threat was evident in the Missile Defense Act of 1999 and the campaign push from presidential candidate George W. Bush to abrogate the ABM Treaty and expand missile defense efforts. The terrorist attack against the US in September 2001 created an opportunity that eased the acceptance of the changes Bush sought. As a result, we are at a unique point in time where the threat perception and the technology to defeat that threat are congruent.

Technology. The ability of technology to deal with perceived threat has also evolved over time. As the size of the threat grew, confidence in defending against that threat began to waiver, especially since the missile interceptors used nuclear weapons. Many believed the cure would be worse than the disease, fearing the radioactive fallout from a large number of nuclear explosions in the atmosphere would be as bad as allowing the weapons to hit.

The development of hit-to-kill technology in the early 1980s reinvigorated the desire for missile defense, culminating in Reagan's 1983 SDI speech. As discussed above, the nature of the threat evolved after the Gulf War first to theater threats and then to small but longer-range threats due to ballistic missile and nuclear weapon proliferation. The technology designed to counter theater threats also evolved, eventually reaching a point that put it in direct conflict with the ABM Treaty restrictions. The Bush Administration was working to either modify or abrogate the Treaty when the terror attacks provided the opportunity it needed to abrogate the Treaty with minimal reaction at home or abroad.

Domestic Environment. The domestic reaction to missile defense has, in many ways, reflected how confident Americans have been that affordable technology could be developed to defeat the threat at hand and that the "cure" would not be worse than the "disease." The debate over missile defense has often remained out of the public eye. Most citizens simply assumed the capability to defend against ICBMs existed. When the issue did receive public attention, Americans generally opposed it. This revolved around two primary concerns—the placement and possible use of nuclear weapons near cities, and the cost. Presidents Eisenhower through Nixon and Congress were also concerned about cost and placement issues, and as the Soviet arsenal grew, they became increasingly doubtful of technical feasibility until missile defenses became a dead issue in 1975. Reagan's SDI speech reopened the debate about the appropriateness of trying to defend against ICBMs and began to erode public opposition to the missile defense concept. The apparent success of the Patriot and hit-to-kill technology in the Gulf War also increased acceptance of missile defense concepts, at least in a TMD role.

As support for TMD systems grew, support for national missile defense (NMD) systems remained ambivalent. Again, much of the public believed systems to defend the

American homeland against ICBMs already existed. Meanwhile, Congress and Presidents George H.W. Bush and William Clinton continued to question cost and feasibility of even limited NMD systems. President George W. Bush strongly supported missile defenses and growing concerns about proliferation combined with the September 2001 terrorist attacks to move domestic support from ambivalence to toleration.

International Environment. The international community's position on missile defense centers on the ABM Treaty. Prior to the Treaty's codification of the logic of MAD, there was little opposition to missile defense. Developing defenses against new weapons was the normal flow of events. The ABM Treaty successfully instituted the concept that missile defense, unlike defense against other types of weapons, was destabilizing in a world ruled by the logic of MAD. Reagan's SDI speech questioned that logic but the international community remained skeptical at best. As in the domestic environment, members of the international community began to accept the necessity of TMD systems as a result of the Gulf War, but they remained skeptical of more ambitious programs that might threaten the stability the ABM Treaty and MAD seemed to provide. The muted international response to President Bush's ABM Treaty abrogation announcement indicates that, as in the domestic environment, the international environment is now at least tolerant of US plans for very limited missile defenses.

Findings

All four factors analyzed in this study have played a major role in preventing missile defenses at some point or another. But, the obstacles that have repeatedly impeded US efforts to develop missile defenses are either being removed or are becoming less relevant. Although the size of the Russian missile arsenal is still very large, the improving relationship between the US and Russia has allowed missile defense advocates to focus on the smaller, less sophisticated threats posed by the emerging ballistic missile states. This change in threat perception makes the prospect of developing technology to counter those threats much more probable in terms of feasibility and cost. The improving American-Russian relationship has also removed many of the international barriers to missile defense by allowing the abrogation of the ABM Treaty. This improving relationship along with hit-to-kill rather than nuclear

armed interceptors makes missile defense more acceptable domestically both to Congress and to the American public.

These changes mean that for the first time it is possible for the US to incorporate missile defense into its strategic posture. The extent of the system eventually deployed will continue to depend on factors this study has examined. The US will probably deploy a system capable of providing what has traditionally been called TMD along with limited NMD capability in the near future. How the international community responds to those systems, how effective they are, and how much they cost will all factor into any decision to expand the system to provide either robust NMD or some type of global defenses.

Implications

Since the lack of an insurmountable obstacle in any one dimension of the missile defense decision will not in itself be sufficient incentive for fielding an operational strategic defense system, we must consider the conditions that might provide sufficient stimulus to energize the national will to do so. I argue that it will take a trigger event to motivate American policy makers and their constituents to reappraise factors in each of the analytical categories this study has examined. The single event most likely to cause that reaction is if some actor fires a ballistic missile —purposefully or accidentally and not necessarily nuclear—against the US, an ally, or American troops abroad. Such an event would confirm the threat in the minds of the US public, Congress, and the world, galvanizing both the US and its friends and allies to demand missile defense. With strong support both domestically and internationally, funding would drastically increase, thereby increasing the likelihood of successful technological development and making it more probable that the US will succeed in fielding an operational system for strategic defense.

Other trigger events are, of course, possible. Unlike trigger events that stopped missile defense by raising obstacles in one area, for a trigger event to persuade the nation to develop and deploy a missile defense, it will need to not only remove all obstacles, but it must cause elements within each of the decision areas to demand a policy of strategic defense. This trend can be seen in the increasing confidence in, and acceptance of, TMD-type systems. The Gulf War demonstrated that the threat was real. The Patriot

responses, though not perfect, inspired faith in the technology. And the domestic and international communities accepted the importance of these systems.

The Way Ahead

For the first time, the US is in a situation where there are no insurmountable obstacles preventing the development of missile defenses. Policy makers should take advantage of this unique opportunity to push technology development as far forward as possible, while at the same time working to get support from domestic and international players. The US also needs to remain sensitive to the concerns of key actors in both the domestic and international environments to defuse new objections. American leaders should also continue efforts to recognize conditions conducive to missile defense within each factor in order to maximize the chance of actual deployment. The incremental approach the Bush Administration has adopted is one method of doing these things. As each new layer becomes operational, the corresponding level of technology gets demonstrated and accepted both internationally and domestically for TMD and limited NMD systems. If there are unexpected technology problems or reactions, they can be resolved before moving on to the next layer. If they cannot be resolved, missile defense deployment may once again be delayed or prevented. The advantage of this approach is that it may well field at least a limited system, providing at least a minimally effective defense for the US. In addition to the incremental approach, the administration should pursue internationalizing the system as much and as soon as possible. Recognizing that the US is not the only state facing ballistic missile threats and working with other states to develop systems to defend themselves will help garner support from other actors in the international environment.

While pursuing defense, it is important that the US continue arms control and nonproliferation measures in order to reduce the actual threat of Russian weapons and to slow the increasing number of countries with nuclear weapons and ballistic missiles. Finally, the US must constantly reassess the elements of this study. The ultimate goal is to reduce the likelihood of damage from a ballistic missile attack in the event deterrence fails. Whether that goal is best achieved by fielding a robust missile defense system, through treaties banning or eliminating their use, or some combination of these policies,

will be ultimately determined by the interplay between threats, technology, and dynamics within the domestic and international environments.

Appendix²²⁴

8 September 1944	The first German V-2 missile struck London.
1944/45	The Allies developed a plan to use timed anti-aircraft artillery barrages to defend London against incoming V-2 missiles. The plan was never implemented because of the damage that would have been caused when unexploded artillery shells fell back on the city.
December 1945	A report by the Scientific Advisory Group of the U.S. Army Air Forces (forerunner of the U.S. Air Force) discussed the use of missiles and methods to defend against missile attacks.
29 May 1946	The Stilwell Board Report, which had been convened in November 1945 to determine what equipment U.S. ground forces would require following World War II, recommended the development of defenses against ballistic missiles.
31 October 1946	Central Intelligence Group Report claims USSR could produce a stockpile of atomic weapons by 1956. ²²⁵
August 1949	USSR explodes first atomic device. ²²⁶
August 1953	USSR explodes first thermonuclear device. ²²⁷
4 October 1957	USSR launches Sputnik. ²²⁸
5 November 1957	NIE estimates USSR could have ICBM operational by 1960 or 1961. ²²⁹
1957	Gaither Report complete. ²³⁰

²²⁴ All entries from Donald R. Baucom "Missile Defense Milestones: 1944-2000," no date, n.p., on-line, Internet, 27 May 2002, available from <http://www.acq.osd.mil/bmdo/bmdolink/html/milestone.html>, unless otherwise noted.

²²⁵ Central Intelligence Group, "Soviet Capabilities for the Development and Production of Certain Types of Weapons and Equipment," in *Assessing the Soviet Threat: The Early Cold War Years*, ed. Woodrow J. Kuhns, available from <http://www.odci.gov/csi/books/coldwarys/docs.html>, documents 1-45, 87.

²²⁶ B. Bruce-Briggs, *The Shield of Faith: A Chronicle of Strategic Defense from Zeppelins to Star Wars*, (New York: Simon and Schuster, 1988), 49.

²²⁷ Ibid., 85.

²²⁸ Council for a Livable World Education Fund, "Briefing Book on Ballistic Missile Defense," September, 2001, 178 pages, on-line, internet, 15 February 2002, available from <http://www.clw.org/nmd/nmdbook01.pdf>, 14.

²²⁹ Donald P. Steury, ed., *Intentions and Capabilities: Estimates on Soviet Strategic Forces, 1950-1983*, (Washington: Center for the Study of Intelligence, 1996), 61.

16 January 1958	Secretary of Defense Neil H. McElroy assigned primary responsibility for the ballistic missile defense mission to the U.S. Army, ordering the Air Force to scale back its Project Wizard and make the radar and command and control equipment from this project compatible with the Army's Nike Zeus ballistic missile defense system.
19 July 1962	During a test over the Pacific Ocean, a Nike Zeus missile fired from the Army's Kwajalein test facility intercepted a dummy warhead from an Atlas ICBM. Although the Zeus only came within two kilometers of the warhead, this was close enough so that the nuclear warhead of a fully operational Zeus would have destroyed the ICBM warhead.
22 December 1962	A Zeus missile came within 200 meters of a reentry vehicle during a simulated intercept over the Pacific Ocean.
October 1964	China explodes first nuclear device. ²³¹
10 November 1966	Secretary of Defense Robert S. McNamara informed the American people that the Soviets were deploying their Galosh ballistic missile defense system.
23 June 1967	At the Glassboro summit, President Lyndon Johnson and Secretary of Defense Robert McNamara tried to convince Soviet Premier Alexsei N. Kosygin that the Soviets should abandon their effort to deploy missile defenses, for the U.S. would merely have to add more nuclear warheads to its ICBM force to overcome these defenses.
18 September 1967	Secretary of Defense Robert S. McNamara announced President Lyndon Johnson's decision to deploy the Sentinel ballistic missile defense system. This was to be a two-tiered defensive system that employed two interceptors: the Spartan and the Sprint, both of which were nuclear-tipped. The Spartan intercepted warheads and decoys outside the atmosphere. The Sprint intercepted warheads within the atmosphere where air resistance would strip away decoys and make it easier to find the attacking warheads. The system itself was designed to protect the U.S. from the so-called "Nth country threat," an attack by unsophisticated ICBMs such as those the People's Republic of China was building.

²³⁰ David L. Snead, *The Gaither Committee, Eisenhower, and the Cold War* (Columbus Oh.: Ohio State University Press, 1999), 2.

²³¹ Donald R. Baucom,, *The Origins of SDI, 1944-1983*,(Lawrence KS: University Press of Kansas, 1992), 25.

6 February 1969	Secretary of Defense Melvin Laird halted the deployment of the Sentinel system pending the completion of a review of U.S. strategic programs by the new administration of President Richard Nixon.
14 March 1969	President Richard Nixon announced his decision to deploy a missile defense system designed essentially to protect U.S. ICBM fields from attack by Soviet missiles. This system retained the same missiles that were to be deployed as part of the Johnson administration's Sentinel system. The re-oriented missile defense system was renamed Safeguard. The overall plan for Safeguard included the option to expand the system so that it could become a population defense against the "Nth country threat."
26 May 1972	U.S. President Richard Nixon and Soviet General Secretary Leonid Brezhnev signed the SALT I agreements which include the ABM Treaty. This treaty limited the Soviets and the U.S. to the deployment of two ABM sites, each having 100 interceptors. One site was to guard an ICBM field, the other would protect the national command authorities at each nation's capital city. A 1974 protocol reduced the number of permitted sites to one.
3 July 1974	Protocol to ABM Treaty reduces number of allowed missile defense sites to one each. ²³²
1 October 1975	Safeguard becomes fully operational. ²³³
2 October 1975	House votes to shut down Safeguard. ²³⁴
1976-1984	The U.S. Army pushed the development of technologies that made possible a revolution in missile defense interceptors. These interceptors could destroy their targets by actually colliding with them. This eliminated the need for nuclear warheads and thus solved one of the major problems with the earlier Safeguard missile defense system.
31 July 1979	Ronald Reagan, Republican presidential hopeful, visited the NORAD Command Post under Cheyenne Mountain near Colorado Springs. Here, Reagan saw a demonstration of the command and control facilities the U.S. would use to alert U.S. retaliatory forces

²³² "Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile System," 3 July 1974, n.p., on-line, internet, 4 May 2002, available from <http://www.state.gov/www/global/arms/treaties/abm/abmprot1.html>.

²³³ Council for a Livable World Education Fund, 14.

²³⁴ Council for a Livable World Education Fund, 14.

and the American people in case of nuclear war. He was upset to learn that there was nothing the U.S. could do to defend itself against missile attacks. Shortly after this, he decided to make missile defenses a part of his national security policy if he were elected president.

- 8 January 1982 A group of private advisors headed by Mr. Karl R. Bendetsen briefed President Reagan in the Oval Office, recommending that he launch an emergency national program to develop missile defenses. This effort should be patterned after the Manhattan District Project that produced America's atomic bomb during World War II.
- 11 February 1983 After months of considering the strategic issues raised by America's inability to field the MX missile as a response to the growing ability of the Soviets to deliver an effective first strike against U.S. ICBMs, the Joint Chiefs unanimously recommended to President Reagan that the U.S. begin to pursue national security strategy that would place increased emphasis on strategic defenses.
- 23 March 1983 President Ronald Reagan announced his decision to launch a major new R&D program to see if it might be feasible to deploy effective missile defenses at some point in the future.
- 6 January 1984 Presidential National Security Decision Directive 119 established the Strategic Defense Initiative (SDI) to explore the possibility of developing missile defenses as an alternative means of deterring nuclear war. This directive also made the Secretary of Defense responsible for the new program. The emphasis in the program was to be on non-nuclear developments, although research work on defensive nuclear devices was to continue "as a hedge against a Soviet ABM breakout."
- 14 June 1989 Based upon his administration's review of U.S. security requirements, President Bush concluded that the goals of the SDI program were generally sound and that the program should continue in such a way as to offer the possibility of a deployment decision in the next few years. Emphasis in this effort was to be directed toward perfecting boost-phase kill technologies such as Brilliant Pebbles. In support of these directions, Bush directed DOD to carry out an independent review of the SDI program and to have this review finished in the fall of 1989.
- 15 March 1990 Ambassador Henry F. Cooper submitted the report of his independent survey of the SDI program. Here, Cooper endorsed

the concept of Brilliant Pebbles and spelled out the concept that became the system for Global Protection Against Limited Strikes (GPALS).

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| 2 August 1990 | Iraq invaded Kuwait. |
| 17 January 1991 | U.S.-led coalition forces in the Middle East began military operations against Iraqi forces. |
| 18 January 1991 | According to press reports, for the first time in history, an anti-missile missile intercepted and destroyed a ballistic missile under combat conditions. A Patriot air defense missile destroyed an Iraqi Scud missile that was attacking a U.S. air base in Saudi Arabia. The Patriot was launched against the Scud at 4:28 a.m. local time. A reporter for the Los Angeles Times wrote: "The age of 'Star Wars' had arrived." After the end of the Gulf War, questions were raised about whether or not this first "kill" actually occurred. This was part of a general public debate about the operational effectiveness of the Patriot system that began soon after hostilities ended and continued for about two years. |
| 29 January 1991 | In his State of the Union Address, President Bush formally announced the shift in focus in the SDI program to the concept known as Global Protection Against Limited Strikes. |
| 5 December 1991 | President George Bush signed into law H.R. 2100, the "National Defense Authorization Act for Fiscal Years 1992 and 1993." That portion of H.R. 2100 dealing with missile defenses was known as the Missile Defense Act of 1991. This act required the Defense Department to "aggressively pursue the development of advanced theater missile defense systems, with the objective of down selecting and deploying such systems by the mid-1990s." Additionally, DOD was to "develop for deployment by the earliest date allowed by the availability of appropriate technology or by fiscal year 1996 a cost-effective, operationally effective, and ABM Treaty-compliant antiballistic missile system at a single site as the initial step toward deployment of an antiballistic missile system." This system was to be "designed to protect the United States against limited ballistic missile threats, including accidental or unauthorized launches or Third World attacks." |
| 8 December 1991 | Three Soviet republics (Russia, Ukraine, and Byelorussia) formed a commonwealth and declared Gorbachev's government "dead." This effectively marked the demise of the Soviet Union and the end of the Cold War. |

- 20 January 1993 William Jefferson Clinton was sworn in as the forty-second president of the United States.
- 13 May 1993 Secretary of Defense Les Aspin announced that the Strategic Defense Initiative Organization was being redesignated the Ballistic Missile Defense Organization to reflect the new focus in DOD's missile defense program and the new way in which the program would be managed. Concerning the refocusing of the program, Secretary Aspin noted that the end of the Cold war meant that the U.S. no longer faced the threat of a massive Soviet attack such as that the SDI program had concentrated on. Now, the U.S. faced theater ballistic missiles in the hands of Third World dictators; these missiles could pose a threat to our forces and to the forces and peoples of our allies. Additionally, in the future, the U.S. could "face hostile or irrational states that have both nuclear warheads and ballistic missile technology that could reach the United States. . . . That's why we've made theater ballistic missile defense our first priority to cope with the new dangers of the post-Cold War era." The next priority was developing defenses for the American people.
- 1995 NIE concludes no new missile threat will emerge against the US for the next 15 years.²³⁵
- 10 February 1996 National Defense Authorization Act for Fiscal Year 1996 signed into law.²³⁶
- 21 August 1997 The Standing Consultative Commission concluded its fifty-fifth session. During this session, Russia and the United States reached agreement on TMD-NMD demarcation and on the matter of succession to the ABM Treaty. The agreements were to be submitted to the governments of the countries involved in the negotiations. After final approval, the agreements were to be signed sometime during the fall.
- 26 September 1997 In a ceremony at the Waldorf-Astoria Hotel in New York, representatives of the United States, Russia, Belarus, Kazakhstan, and Ukraine signed agreements that aimed to establish a demarcation between TMD systems not restricted by the ABM Treaty of 1972 and national missile defense systems that were covered by the treaty. These delegates also signed a memorandum

²³⁵ James J. Wirtz and Jeffrey A. Larsen eds., *Rockets' Red Glare: Missile Defenses and the Future of World Politics*, (Boulder, Colo.: Westview Press, 2001), 4.

²³⁶ Baker Spring, "Defending America from Missile Attack," in *Priorities for the President*, ed., Stuart M. Butler and Kim R. Holmes, (Washington D.C.: Heritage Foundation, 2001), 17, available from <http://www.heritage.org/mandate/priorities/pdf/priorities-new.pdf>.

of understanding that named Russia, Belarus, Kazakhstan, and Ukraine as successor states to the ABM Treaty, replacing the defunct Soviet Union.

- 29 September 1997 The Ballistic Missile Defense Organization and the U.S. Army successfully demonstrated the first Developmental Test Flight (DT-1) of a PATRIOT Advanced Capability-3 (PAC-3) missile at White Sands Missile Range, N.M. Preliminary data indicate the test was successful. Test objectives included the verification of launch and flight functions, interfaces with the existing Patriot System, and missile operation in flight environments prior to targets intercept missions. No intercept of a target was attempted in this test.
- 15 July 1998 The Commission to Assess the Ballistic Missile Threat to the United States (Rumsfeld Commission) submitted its report to Congress. The nine commissioners who made up the Rumsfeld panel were unanimous in their conclusions, which included the following: "Concerted efforts by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads pose a growing threat to the United States, its deployed forces and its friends and allies. These newer, developing threats in North Korea, Iran and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and China, nations with which we are not now in conflict but which remain in uncertain transitions. The newer ballistic missile-equipped nations' capabilities will not match those of U.S. systems for accuracy or reliability. However, they would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made."
- 21 July 1998 Iran carried out the first flight test of its Shahab-3 medium-range ballistic missile, which was expected to have a range of 800 to 900 miles, sufficiently great to strike virtually any country in the Middle East, including Israel.
- 31 August 1998 North Korea flight tested its Taepo Dong-1 missile in a flight that carried over Japan. According to the Washington Times, the missile traveled about 1000 miles, surpassing by 380 miles the range of the No-Dong medium ranged missile. This launch caused an angry reaction in Japan, which immediately canceled plans to extend \$1 billion in aid that was to help North Korea build "two civilian reactors." It also caused a furor in the U.S. government

over the next two weeks as its implications for the U.S. threat were teased out.

- 21-27 February 1999 During this week, a U.S. delegation composed of Robert Bell (special assistant to the president for arms control), Deputy Secretary of State Strobe Talbott, and John Holum (Under Secretary of State for Arms Control and International Security Affairs) traveled to Moscow for preliminary talks on modifying the ABM Treaty. The Russians essentially stonewalled the American delegation, continuing to insist on no changes to the treaty.
- 16 March 1999 The Senate voted 97 to 3 "to commit the United States to deploy a national anti-missile defense system after President Clinton and most Democrats dropped their long-standing opposition to the measure in return for a renewed commitment to arms control. The measure called for the U.S. to deploy national missile defenses "as soon as technologically possible."
- 17 March 1999 By a vote of 317 to 105, the House of Representatives approved a measure committing the U.S. to deploy national missile defenses.
- 20 May 1999 By a vote of 345 to 71, the House approved legislation stating that it was the policy of the United States to field limited national missile defenses as soon as technically feasible. The bill also said that the U.S. should continue arms control talks with the Russians.
- 20 June 1999 The U.S. and Russia issued a joint statement following discussions between U.S. President William Clinton and Russian President Boris Yeltsin. The statement began by noting that the ABM Treaty was fundamental to "strengthening strategic stability" and reducing strategic offensive arms. "Proceeding from the fundamental significance of the ABM Treaty for further reductions in strategic offensive arms, and from the need to maintain the strategic balance between the United States of America and the Russian Federation, the Parties reaffirm their commitment to that Treaty, which is a cornerstone of strategic stability, and to continuing efforts to strengthen the Treaty, to enhance its viability and effectiveness in the future."
- 23 July 1999 President Clinton signs National Missile Defense Act.²³⁷
- 17 August 1999 The United States and Russia resumed strategic arms talks that included both further restrictions on offensive arms and a

²³⁷ Council for a Livable World Education Fund, 18.

modification of the ABM Treaty to allow the United States to deploy a limited national missile defense system.

- September 1999 Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015 commented on impact of proliferation in the Middle East and Asia.²³⁸
- 26 October 1999 Dr. Jacques S. Gansler, USD (A&T) issued an acquisition decision memorandum authorizing the PAC-3 program to begin low-rate initial production.
- 1 September 2000 In a speech at Georgetown University, President William Jefferson Clinton announced his decision not to initiate an NMD deployment. The President noted that the world was, indeed, becoming in some ways a more dangerous place so that pursuing an NMD system was rational. Nevertheless, given the fact that the NMD program was still showing signs of technological difficulties and that all of America's security measures, including arms control, must complement each other, he had decided that the time was not right for a deployment.
- 16 October 2000 The Israel Defense Forces declared Israel's Arrow missile defense system operational.
- 1 May 2001 In a speech at National Defense University at Fort Leslie McNair on Haines Point, Washington, D.C., President George W. Bush called for a new strategic departure to move the world beyond the strategic framework of the Cold War, which still dominates the international security environment. He called for more appropriate sizing of America's nuclear forces and moving away from the ABM Treaty. Regarding the treaty, the President noted that it continues to impose on today's world the outmoded and no longer workable doctrine of mutual assured destruction. At the same time, the treaty blocks promising avenues of missile defense developments that offer more appropriate responses to today's international security environment. Nevertheless, under Secretary Rumsfeld, DOD had been exploring options for missile defense that included air- and sea-based systems and concepts for boost phase intercept. The President announced that his administration would conduct consultations with America's allies beginning the following week when he dispatched high level teams to the capitals

²³⁸ "Foreign Missile Developments and the Ballistic Missile Threat Through 2015." September 1999, n.p., on-line, internet, 28 May 2002, available from http://www.cia.gov/nic/pubs/other_products/foreign_missile_developments.htm.

of Europe, Asia, Canada, and Australia. These teams would be headed by Richard Armitage, Paul Wolfowitz, and Steven Hadley.

- 9 August 2001 Lt. Ronald T. Kadish, BMDO Director, issued the Record of Decision for the beginning of site preparation at Fort Greeley, Alaska, for the "Missile Defense System Test Bed."
- 11 September 2001 Terrorists hijacked four passenger jets, crashing one into each of the towers in the World Trade Center and one into the Pentagon. The fourth plane crashed in Pennsylvania, when passengers alerted to the hijackers' intentions attempted to gain control of the plane.
- 18 September 2001 Senators Carl Levin (D-MI) and John Warner (R-VA) agreed to "drop a controversial provision on the Anti-Ballistic Missile Treaty from the fiscal 2001 defense authorization bill so that Democrats and Republicans can stand united behind the measure in the aftermath of last week's terrorist attacks." This agreement came after Levin (chairman of the Senate Armed Services Committee [SASC]) and Warner, ranking Republican on the committee, held "lengthy meetings" on the subject. The focus of the compromise was a Democratically sponsored provision that would require congressional approval of any missile defense test that violated the ABM Treaty. Under the terms of the compromise, the Democrats would be free to introduce their ABM Treaty measure in a bill apart from the Defense Authorization Bill. Earlier, during SASC committee proceeding, Levin had also engineered a \$1.3 billion cut to the \$8.3 billion missile defense; and Levin intended to keep this cut in the bill when it went to the floor. However, Senator Warner gave notice that he would introduce a measure on the floor to restore the cut. According to a report in the New York Times, a Warner amendment to restore the cut funding would receive the support of a number of Democrats.
- 19-21 October 2001 A poll conducted during this period by the Gallup Organization showed that 70% of the American people favored spending the money needed to build a missile defense system. This was up from 53% in a 14-16 July poll.
- 13 December 2001 President George W. Bush served notice to Russia that the United States was withdrawing from the ABM Treaty and was giving the required six-months notice.
- 2 January 2002 Secretary of Defense Donald Rumsfeld issued guidance on the execution of the U.S. missile defense program. Included here were

instructions that the Ballistic Missile Defense Organization be renamed the Missile Defense Agency.

9 January 2002 Nuclear Posture Review included unilateral US nuclear cuts.²³⁹

24 May 2002 Treaty of Moscow signed, reducing US and Russian nuclear arsenals below 2,200 over the next 10 years.²⁴⁰

²³⁹ "Findings of the Nuclear Posture Review," 9 January 2002, n.p., on-line, Internet, 22 February 2002, available from <http://www.defenselink.mil/news/Jan2002/020109-D-6570C-001.pdf>.

²⁴⁰ Ron Popeski, "Putin, Bush Sign Landmark Nuclear Arms Treaty," 24 May 2002, on-line, internet, 26 May 2002, available from http://reuters.com/news_article.jhtml?type=politicsnews&StoryID=1007238.

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